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The Package Revolution

Government Tests and Demand for Unit Packages React in Growing Demand for Pulp and Paper Products

By WALDON FAWCETT

IT is trite to say that all industry is living through an era of eternal change. Even so, the paper industry is being subjected to dual or double-acting influences which are treating it to an experience that is, perhaps, unique in the entire industrial field. Directly, there is felt in the paper-making and paper-marketing community the effect of technical progress, the development of new sources of raw material, and the changes of consumer-demand that have come with swings of popular fashion and the growth of that "style consciousness" of which we hear so much today. Parallel to this pressure is the exertion of a broad, general, though indirect influence which creates a novel situation by applying to paperdom, from without, an urge to readjustment quite as strong as any incentive from within.

The newest factor which is reacting upon the paper industry is what is comprehensively termed "the package revolution." In the past, packaging, alike to every other business activity, has been constantly undergoing minor revisions of methods and materials. But, latterly, it appears that the entire structure has been shaken to its foundations. Looking over the far-flung commercial field, encompassing all distributors who deliver their wares sacked, wrapped, or parceled, one beholds, in every quarter, packers and packagers in the throes of experiment or already committed to new policies. To understand what this abandonment of traditions will do to the paper industry, it is necessary to realize what has brought about the package revolution.

Advertising Value of Attractive Packaging

Several elements combined to start the transformation, as is usual when there is a drastic overturn of precedents. Underlying all is the circumstance that modern packaging, as it is known to-day, with its bright raiment, its potentialities of self-selling appeal, and advertising display—is a comparatively recent development. Certain classes of goods have, from time out of mind, traveled to market in receptacles of one kind or another. But the latter day technique of sanitary portioning and packaging to sell has come within a relatively few years. The youth of the art is such that packaging may be said to be but just finding itself. Every week finds new firms converted to packaging. And almost every month sees an industry that had previously sold its wares only in bulk turning to individual vehicles for retail service. All of which means that with packaging more or less in a state of flux, packagers have been particularly susceptible to the inventions and improvements which have lately appeared.

Demand for the Small Package

As regards its contacts with the paper industry, one of the most interesting causes of the package revolution is to be found in the necessities of the new conditions of distribution. Factors seemingly so remote as the drift of the population to smaller houses (thanks to the shortage of domestic help) and to small apartments (thanks to higher rents) have turned packagers to pulp and paper products. With hand-to-mouth buying, or, shall we say, meal-to-meal ordering, and with small pantries for storage, the call is for small packages. Lo, and behold! more than 700 standard grocery items now put out in the 5-and-10 cent size packages. Wood is unthinkable for these miniature units. Paper, pasteboard, fiber—these are the logical mediums.

What the exigencies of short ordering and "in-

dividual portioning" have been doing in one direction, higher transportation rates have done in another direction. Only in the case of certain liquids are glass containers able to meet the competition of the lightweight paper containers. Then, too, avoidance of the breakage hazard has assumed a new importance since the revolution has brought such pulp and paper contenders as the sealcones which are taking the place of glass milk bottles.

Each Package its Own Show Case

This brings us to what is, after all, the primary source or inspiration of the packaging revolution and the essence of its significance for pulp and paper men. The rise of revolutionary new packaging mediums more than anything else, brought about the change from the old order. To be sure, it might be said, with truth, that some of these new packaging mediums were born of latter-day demands and necessities. But it is also true, that each new invention or improved product, once it was introduced, has gone farther in its constructive achievements than the original need contemplated. In demonstration of that, one has but to summon the paper tape and other similar products which were first contemplated as reinforcing agents for fiber boxes, but which have made original contributions to the cause of tight-sealing and package advertising.

It is not possible, within the limits of this article, to catalogue all the contributions of the pulp and paper industry that sowed the seed of discontent with the old packaging limitations and are now in position to reap the rewards of the packaging revolution. A few outstanding examples may be cited in hint of untold possibilities to come. First, there is the revival of the paper bag—a renaissance made possible by the development of liners or lining papers. The miracle of the leakproof paper container is confirmed by jellies, jams and preserves shipped successfully across the continent. Super-successors of the old-time waxed and glassine papers have glorified the "see through", or transparent package, until we find entire campaigns of distribution predicated on the fact that each package occupies it's "own show case".

Most impressive, in one sense, of all the revolutionizing new forms of packaging are those which, by their attributes or adaptability, have made possible new adventures in merchandising. For example, gasp at the achievement of the class of leakproof paper containers that have literally brought into existence a promising new industry,—i. e. the "frozen pack", so called whereby frozen fresh fruit and vegetables are transmitted all the way to retail outlets, under refrigerated storage and are there dispensed in individual or household units. Or, again, behold the triumph of the new generation of greaseproof, odorproof papers which, in co-operation with "dry ice", have brought about the packaging, for long-range distribution, of fresh meat and fishery products.

Prepacking Demanded by Retailers

It is just as well to realize that some of the phases of the package revolution which are due to most deeply affect the pulp and paper industry are in process and far from complete. This is the situation, for instance, with respect to what is known as "unit packing" or "prepacking". Unit packing simply signifies once-for-all packaging at the seat of production. Under the old routine, most classes of goods, originally packed at the factory in wholesale quantities, have had to be repacked individually by merchants for retail delivery. Lately the retailers have begun to rebel. They are demanding "full service" packing of units which will permit sale by sample and the relaying of the factory-packed box or carton or bag to the ultimate consumer. Inevitably the spread of unit packing must make for a larger consumption of pulp and paper products, albeit the packing and packaging materials may be contracted for in different quarters in proportion as retail merchants are enabled to cut down their packing room forces.

Just as some of the new policies and practices that have come in the train of the packaging revolution have not been thoroughly shaken down, so is it too early to predict the influence ultimately to be wielded by some of the new mediums. Take, as a case in point, the novel moulded pulp holloware containers which are just making their appearance in the American market. These new expressions of the versatility of pulp have made their presence felt rather sensationally in Great Britain and on the Continent. But the first American factory is just going into production and it remains to be seen how this invention will contribute to the package revolution here in the United States. There is room for the same interested speculation in regard to new variants of the transparent papers, such as the competitor of cellophane which is to be produced at a new plant in Virginia.

Lining Papers for Containers

Pulp and paper men may laugh in their sleeves at one consequence of the package revolution which is revealing rival container industries as dependent, to an unsuspected degree, upon pulp and paper accessories. The prize example of this dependency is seen in the new estimate of the value of liners or lining papers for metal containers. That lining papers perform an important function in insulating package contents has been suspected for sometime past by some of the best-informed packers in tin. It remained, however, for Uncle Sam, to drive home the truth most dramatically.

For more than two years past, the Office of Tea

Inspection, a branch of the U. S. Department of Agriculture, as conducted, in seven different cities, with contrasting climatic conditions, a comparative test of tea packages in order to ascertain the effect of different forms of packaging upon the flavor and keeping qualities of the tea. Some 110 different species of containers were on trial, checked against rigid controls. The outcome of this test brought many surprises, some of the most expensive packages proving the least effective and permitting a deterioration of as much as 12 cents a pound in the value of the tea. The prime surprise came, however, in the revelation that an appropriate paper liner is the savior of the tea package. It was demonstrated, indeed, that a tea packer may safely employ a package shell of whatever character he prefers—not excepting the cardboard that is supposedly most liable to transmit moisture—so long as he isolates the package contents by means of an inner envelope of suitable lining paper.

Material considerations in the packaging revolution are quite sufficient in themselves to make deep and lasting impress upon the various sections of the pulp and paper industries. But there is a sentimental or spiritual side to this revolution that also needs to be reckoned with in this same connection. An essential part of the package revolution is attributable to the change of the ideas and ambitions of packagers with respect to the functions and purposes of their packages. Not so long ago the average packager regarded his package resources from a strictly utilitarian standpoint. The container was a carrier of the goods, no more. The package revolution has brought a new conception.

Fancy Wrappers

The up-to-date package yet fills the role of a commodity conveyance and must do this efficiently if it is to be pronounced a success. But, in addition, the modern container is very likely to have to qualify as an art object or excite curiosity as a novelty, or carry the inherent suggestion of a gift. How this extra consideration or multiple-functioning has contributed to consumption of high grade pulp and paper products is graphically illustrated by the luxurious set-up or rigid paper boxes that are now taken as a matter of course in such lines as confectionery, jewelry, toilet goods, etc. Even more significant, perhaps, from the supply standpoint, is the extent to which paper products are now being drafted to provide "holiday overcoats" or festive outer wrappings which put standard containers in fete for seasonal or "occasional" distribution and which are removable at will when the unsold packages are to be put back into regular stock.

Fast as is the gait that the packaging revolution has struck, this past few years, no observer will assume that the course has been run. That the pulp and paper industries have further gains to come seems to be promised by the upheavals that are in progress as this is written. Take, as a case in point, the breach in the time-honored traditions of cigar packaging. The conventional wooden box is, as of yore, the approved container for cigars. But only for the erstwhile standard quantities,—units of 25, 50 or more. For the new units of five or ten cigars, which are sweeping to large sales, the paper box is the favored holder. And champions of the paper box are predicting that at no distant date, the revolution in this sector will be complete and that the paper box will make a conquest quite as thrilling in its way as the rout of the matter of fact bread wrapper by the paper box since "sliced bread" took the bakery industry by storm.

Steam Consumption of Back Pressure Turbines

By WARREN D. SPENGLER

OFTEN in studying power plant economies, it is necessary to know the actual water rate of a small turbine driving an auxiliary unit. The situation does not warrant the installation of a flow meter and the engineer must resort to some means of securing this rate that is more accurate than a theoretical guarantee. For a condition where the turbine is using superheated steam and running on a back pressure, the water rate can be accurately calculated by a simple procedure.

With the knowledge of the pressure and temperature of the steam at the throttle and noting the pressure and temperature of the steam at exhaust, one can readily calculate the heat taken out of the steam from steam tables.

As an example: Suppose the steam at the throttle had a pressure of 250 lb. gauge and temperature of 100° Superheat, and at exhaust a pressure of 5 lb. gauge and a temperature of 278° Fahr. According to the tables, the heat in the steam at the throttle is 1265 B. t. u. and at exhaust 1180 B. t. u. The heat used by the turbine per pound of steam is therefore 1265—1180=85 B. t. u. Since there are 2545 B. t. u. per hp. hr., the pounds of steam per horsepower hour equals

$$\frac{2545}{85} = 30 \text{ lbs.}$$

Only in case the exhaust steam is wet will this not produce correct results, but with superheated steam used for small turbines, the exhaust steam is usually superheated.

One hundred pounds of old cotton rags will make from sixty-five to seventy-five pounds of paper pulp. This pulp will make from sixty to seventy pounds of paper.

Adventures in Technical Control

More or Less Veracious Incidents in the Career of any Paper Mill Chemist

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GENERAL use of chemistry and technical control in the paper industry is still sufficiently new that it is necessary to turn backward only a few years to appreciate the revolutionary changes which have taken place within the profession itself and the still greater changes in attitude toward it.

In the beginning, it would appear that some manufacturers inaugurated a chemistry department or chemical control service largely as something to which they could point as proof of their progressiveness. A decade or two ago many employers were chiefly interested in securing a chemist who would not "upset things", with the result that their laboratories, while ornamental perhaps, were often lacking in the quality of being useful.

The graduate of that time who believed a diploma, a degree and even much laboratory experience, fitted him for his life work was due for an eye-opener. He had learned little regarding that most important unit of all—the human factor. He still did not believe there were such people in the world as the man who stood on a prairie and declared that no one need tell him the world was round when he could see with his own eyes that it was flat.

A man who had reached the top of a manufacturing department by way of the beater room and paper machines, with no assistance from meters, scales and slide rules, held in slight esteem an equipment of test tubes, balances and crucibles. He could weigh a sheet of paper on his finger tips, tear a corner, hold it to the light, wet it with his tongue, and tell you the weight, strength and beater furnish! And often he could! Many of the oldtimers developed remarkable powers along those lines. They were not always available, however, and employers became increasingly mechanical minded—with reservations.

Often the sulphite superintendent was temperamental and had to be "handled". The chemist with a suggestion to make learned to study his approach in order that such a man might be led to believe it had been his own idea all the time. This made for harmony in the plant, but was not conducive to rapid promotion for the chemist.

"New-fangled notions" were tolerated but not encouraged.

One paper company widely and successfully advertised its product as medicated toilet paper. A formula was given the men in charge and the chemicals were dutifully added to the beater furnish until the initial supply was exhausted. Then, being conscientious men, they carefully wrote the recipe on slips of paper which were placed without fail in each beater or stock chest. This enabled them when dealers asked if they were still using the formula to reply truthfully that they were.

A chemist learned to live in harmony with men who thought he knew a little less than nothing, but his real difficulties were provided by the people who thought he knew everything.

An office manager would send to the laboratory a number of unknown quantities with the request that they be "run through immediately". Often the actual time required for the natural reaction and check-up would be a few days to a week, but the following morning the analyst was reasonably certain to find on his desk a memorandum from the manager asking why he had not reported on his findings.

Many employers seemed to expect the chemist to place a sample of material in a silk hat and pull out the component parts as though they were rabbits.

Once a Morning's Work

A typical morning in the laboratory would include the following:

A call from the shipping clerk who sat on a piece of gum at a picture shop and would like to know how to take it off.

A visit from the janitor, who complained of shooting pains around his heart and inquired what he had better take for it, leaving indignantly when he was referred to a physician.

A summons from the boss who surreptitiously produced a large square bottle containing a few ounces of clear liquid flavored with juniper, explaining that every one at the party instead of getting pleasantly jingled had been laid out cold, with black spots before their eyes and other alarming post-Volstead symptoms. As they had two cases like the sample, would the chemist please take out of it whatever was causing the visual polka dots. When one explained that the paper mill laboratory was not equipped for such investigations and the only safe procedure was to find a new bootlegger, the boss joined those who had discovered that a college education was only a frill.

The office boy would ask for something to cure warts, the stenographer would seek information regarding a cleaner for suede shoes, and the manager's wife would telephone that her rhubarb sauce had

taken the black stain off her aluminum kettle and would it poison anybody if they ate the rhubarb!

When the chemist could forget that he had been hired to make paper, he felt that his life was not being lived entirely in vain.

The Mysterious Process

In some mills and environs the only person who never asked for advice was the sulphite superintendent. This department had long been classed among the mysteries, and the high priest rather naturally resented statements by a flippant youth to the effect: "You don't make sulphite by hocus-pocus. You take such a quantity of chips, such and such chemicals and so much steam and if you have no meters and charts you watch it like forty hawks if you are to have good pulp. There is no more magic about it than there is to cooking macaroni."

It is difficult to believe how zealously many old-time sulphite men cloaked their departments in secrecy. There is of record the case of such a superintendent who had been compelled to take on a new man and teach him the art of making pulp. As soon as the novice felt quite sure of his knowledge, the superintendent asked for a holiday. He arranged with his brother-in-law, who was his assistant, to dilute the liquor when the digestors were being filled during his absence so the new man would be certain to blow raw cooks, thus putting a decided crimp in his prospects. The brother-in-law was obliging but in some way miscalculated, with the result that the superintendent returned in time to blow the bad cooks in person. However, he continued to flourish for several years, despite the accident.

Another mill was persuaded to install meters in the digester room while the sulphite superintendent was enjoying his vacation. On his return he promptly seized an axe and demolished the new equipment to the battle cry of: "You can't make sulphite with clocks." He also got away with it for a time, but that mill is now making most satisfactory pulp with the aid of "clocks" and the former superintendent is raising chickens, doubtless in the good old-fashioned way.

In shining contrast to these examples, are the many honest, intelligent and progressive workers in chemical pulp, whose fidelity and diligence have added materially to the high state of the paper industry.

After all, the sulphite department is a very important section of the plant. If you doubt this, listen in when there are complaints from headquarters regarding quality. He is a poor papermaker who is unable to convince people that the sulphite is responsible for every fault, including wrinkles, soft rolls and calender cuts.

The technical man, being detached from the different divisions, sees the plant as a whole rather than in terms of units like motors, pulp, bleach, grinders and adding machines. His attitude is usually fair—it must be fair if he hopes to obtain co-operation from the various departments.

To the saying: "There are three kinds of human beings—men, women and preachers", the old-time paper mill man added, "and chemists". This opinion has changed, largely for the reason that few technicians of the pedantic type have been finding their way of late into practical papermaking.

Tact is still an indispensable attribute of the technical man, but the young graduate entering industry no longer finds it necessary to borrow a "chew" off the mechanic's plug of tobacco with the hope of convincing him that he is not being high-hatted. Pioneering is accomplished.

Cost Accounting in the Paper Industry

Part X—Formation and Use of a Budget

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IN controlling the operation of a company the chief executives are beset with many problems of which the costs are but a part. They cannot devote any great part of their time to the consideration of accounting, but as the costs tell the story about results of operations, they play an important part in directing the operations of the company. The object then should be to give the executives just what they need without loss of time on their part in considering extraneous matters other than to read the necessary reports.

Queries and Answers

In order to encourage discussion on the subject of cost accounting in the paper industry, the author of this series of articles is prepared to answer to the best of his ability any queries on cost accounting that may be directed to him.

Function of a Budget

The one thing an operating executive desires is to know whether or not his department is running as it should, and if not, where the fault lies. It is the function of a budget to tell this. If he has laid out a well considered plan of operations the budget shows him just to what extent this plan is being carried through—of course cost accounting accomplishes many other functions, but the budget is the method which gives an immediate control and it is, therefore, the chief tool of the operating executive.

A budget, as described in previous chapters, may seem like a lot of work, and so it is, but it is work well worth while and in the long run actually results in a lessening of strain. By laying plans well in advance and anticipating problems that are apt to arise, they can be considered at a more opportune time than is the case when they come up unexpectedly and have to be solved willy-nilly amid the pressure of other duties. With the major policies settled (barring unexpected contingencies) by the participation of all the departments the day-to-day duties of the officers should be more free from worry and strain thus giving them greater ease to solve immediate problems as they arise.

Setting Up a Budget

A budget may be set up in either of three ways.

1—It may be evolved within the company without expert aid.

2—It may be evolved within the company with expert aid, or

3—It may be set up fully worked out, by some consulting expert.

The second method appears to be the best. The first, or evolving the budget within the company and without expert aid, is apt to be a long and tedious process before a fully operating budget is secured. The assistance of a person familiar with budgets, their formation and operation will greatly expedite matters, because such a man will have a definite objective in mind and the training necessary to bring it about with a minimum of lost time.

The third method is open to the objection that, in the case of a budget, the proverb "More haste, less speed" comes true. Planting a fully formed budget on an organization which has not been fully prepared for it is apt to backfire. The force, not appreciating the full benefits to be gained, is likely to rebel at the "red-tape". A budget unquestionably carries with it a lot of new forms, reports and work, and unless thoroughly understood, may cause considerable friction. When, however, the various executives have tested it out on a small scale they will undoubtedly like it and continually ask for more and more until the operation of a complete budget is a simple and natural thing.

The First Step

Let us assume that a relatively small company has decided to adopt the budget idea and is anxious to proceed. What steps should be taken?

Undoubtedly the first one is to set up the necessary machinery (on a small scale at first) and designate some person to act as budgetary officer. This need not be an expensive procedure. If expert aid is brought in it may be, at first, in a purely consulting capacity, by a budget expert who can give sufficient time to guide the budgetary officer in his duties until he is fully conversant with them.

The budgetary officer should be a man of prestige, having tact and a mind of his own. He must, above all, be possessed of a constructive imagination to a high degree, and, of course, he must be good at figures, able to analyze and get at the facts in the case. As the budget will probably not occupy his whole time for a while at first, he can be an officer already there, but his duties should be such that as time goes on he can devote more and more time to the budget until finally it will be his entire occupation. The choice of such a man is a matter of great importance and should be given the most careful consideration.

The Organization Chart

Probably the next step, and the first one the budgetary officer will undertake, is to make up an organization chart of the company. A budget operates on the principle of holding department heads to definite responsibilities and hence it is essential that the budgetary officer be well informed as to who is responsible for every function in the company. Of course he need not go into the various subdivisions of departments, although later on he may find it useful to do so as part of his duties in aiding the department heads in the use and formation of their parts of the budget. For the time being, it is sufficient that he knows that sales are under John Doe; production under Richard Roe; accounting under Harry Lee, and so on.

It is very likely that in the course of doing this he may encounter some peculiar conditions involving conflicts of authority. He may find one man with a multitude of dissimilar duties and many opportunities for "passing the buck". This is very likely to be the case in an organization that has grown up over a period of years and much advantage may be secured from clarifying such a situation. Unquestionably morale is improved if authority is definite and fixed, so that every one knows just who is his boss, and the executives, in turn, know the extent of their responsibilities and authority. Hence the very first step taken may be productive of good.

Financial Budget

It is quite probable that the first budget may be confined entirely to a financial budget. This consists, as its name implies, merely of an estimate of the gross sales for a period in advance, usually a year or six months, together with rather rough estimates of the probable expenses. This serves two objects. It gives the treasury department some conception of the requirements before it and it acquaints the principal executives with the general idea.

Such a budget should not be too exacting in its requirements. Sales estimates should be taken "as is" from the sales department and no special effort be made to break it down into grades, etc. The factory manager should not be pressed too hard, being approached from the angle that it was a new device

to help the treasurer or some similar approach. He might be asked as to his probable cash requirements for payroll, etc., in general terms. The estimated receipts and disbursements would then be worked into cash statements for each month by the treasury department and, of course, would be of considerable assistance to them.

The First Year

The first year of operation with the financial budget would be one of preparation for the next step the following year. A great deal of missionary work among the various department heads would be conducted by the budgetary officer in an endeavor to "sell" the idea. Using the financial budget as an example, as well as he can, he would call each person's attention to the advantages he could gain through it. Tact has to be used. It is not well usually to go at once on the method that "this will help you conduct your business". Men often resent this attitude. They feel they know how to conduct their business without outside aid. However, by pointing out how useful it is to the treasurer, the question could be gently raised as to why some slight extension of the plan should not be made so that he might also benefit?

The successful working out of the plan will depend on the organization and the type of executive in charge. Some heads of departments may have had experience with budgets or read about them and be prepared to accept the idea. But if not, it will be well to move slowly and prove by demonstration the value of budgets.

Gradually the system will crystalize, one department after another falling in line, until it is safe to go full speed ahead. The remarkable thing about it is that, provided it is tactfully approached so as not to arouse opposition, it is self-selling. Once an executive has tried it out fairly and understands it, the advantages are so apparent that you cannot give it to him fast enough.

The Budget in Full Operation

Let us now assume that we are safe in going ahead with the complete plan. What steps shall we take?

We have already set up the necessary organization as regards the budgetary officer. The auxiliary machinery now remaining is the budgetary committee, consisting of the heads of the principal departments, the president, the salesmanager, the head of the production department, the purchasing agent, the treasurer, and the budgetary officer as secretary. In some companies the board of directors act on the budget and finally adopt it, appropriating funds as required for the various purposes. Depending on the size of the company the budgetary officer may have a regular department of economics to assist him. The reason for this will appear later, but in any event the budgetary officer should himself be pretty well versed in economics.

The sales department is called upon for its estimates of sales in dollars and tons. This time it is to be in as much detail as possible—by grades, by territories, by classes of customers, etc. To some extent all this information will be of value to other departments; the tonnage and grades for the production department; the territories for the traffic department (for use in estimating freight costs), and the dollars and customers for the treasury. Primarily it forms a market survey which is of inestimable value to the sales department itself.

Checking the Sales Budget

Herein lies one of the principal functions of the budgetary officer and why he either needs the assistance of an economist or needs to be one himself. The true budget is not a guessing contest. It is an earnest endeavor to get at the facts in a business and lay plans for future operations along lines which will be most profitable. It aims to forecast events and avoid surprises. To this end each estimate must be as exact and true as possible, and the foundation of the whole structure is the sales.

Most salesmanagers are optimists. They have to be or they would not be good salesmanagers. Thus the sales department's estimates have to be taken with a grain of salt and it is the function of the budgetary officer to wield the salt shaker.

A Company's Business Contingent on Many Factors

Unfortunately a company unlike a person does not control its own destiny. Many factors near and far influence it. There are conditions prevailing within the company itself which may be controllable. There are competitors. Their condition affects the firm's sales and the prices it will receive. There is the condition of the industry as a whole. Companies not now competitors may become so if their own line falls off; there is the condition of its customers and their competitors, industry and customers; there is business in general; the condition of the nation, foreign nations, law, tariff, etc.

Use of Economics

Economics is the field of study that considers these conditions outside of an individual company. What are general business conditions; what effect will the crops have on it; the sale of automobiles; the change in the rediscount rate? All these and many more are studied by the economist with the object in view of forecasting business conditions and then, with the knowledge in hand, a knowledge of the company's position within the industry and its own capabilities, they can predict fairly accurately what the sales will be.

And they do. Of course a company with unlimited funds and wherein the cost of an extensive economic department is a negligible part of its returns from sales is in a better position to do this than a firm

who cannot afford such research. Companies such as the Eastman Kodak Company, General Motors, Graybar Company, and many others maintain extensive economic departments and come extremely close, year after year, in predicting their sales. Think what this means to them in saving in profitably prepared production programs, in reductions in inventories, in increased turnover and the like. In common with all forms of research, properly conducted, it pays dividends many times over.

Economics for the Small Concern

Fortunately the small concern does not have to go to such great length to get economic facts. Of course, the deeper one digs into this, the more accurate the results will be, but with the use of some of the many services now available, the Alexander Hamilton Institute, the Standard Statistics, Babson's, and last, but not by far the least, the excellent bulletins of the A.P.P.A. Any concern can keep abreast of the times and make very fair predictions. In any event, these services, being of a general nature, must be considered in light of the particular concern and herein lies the necessity for the budgetary officer to have sufficient economic training to utilize the mass of information available.

Revising the Sales Estimate

So the next step is to take the sales estimate and so far as possible revise it into what will probably happen. If business looks good it may even be increased; if poor it may be decreased—in any event the budgetary officer must satisfy himself that the final figures are likely to be a true picture of what is going to happen.

Safety

A Conversation Heard in an American Pulp and Paper Mill

By JAMES JAYNES

"HELLO, Bill."

"Hello, Jim, are you ready to eat your lunch?"

"You bet. Say, Bill, did you know that Sam White got his hand crushed in the calender stack?"

"No, when did it happen?"

"Just a few minutes ago. He is in the first aid room now. The doctor says he may lose his hand. It's a wonder he did not get killed. Guess he would have if Jack Brown had not been standing right at the switch when it happened. He saw Sam putting the sheet through the stack and in some way his hand got caught. He yelled and Jack swung around and pulled the switch. I feel sorry for Sam, it's his first accident. Another thing I am sorry for, is that its another **disabling accident** to chalk up against our mill in **The Paper Industry Safety Contest.**"

"Yes, it is too bad. I am sorry it happened."

"Bill, the attitude of some of our workers about **safety** makes me feel like choking them. Just the other day, while going through the bleach room, I saw one of the crew leaders **disregard** a **danger** sign. I called his attention to the sign and what do you think he said to me?"

"I don't know. What did he say, Jim?"

"He said, 'is it any of your d— business if I get hurt? Run along and mind your business, I am taking care of myself.' It just about takes the heart out of a fellow to try and **boost safety** and then have a reply like that; especially from a crew leader."

"What did you say to him, Jim?"

"Nothing, what could I say?"

"Well I would suggest that you ask the fellow who talks that way, **'who pays the bill, if you get injured?'** He will most likely say, 'you don't, that's one sure thing.' When he does, just say to him, 'you think the company pays the bill, don't you? Possibly they are the ones that hand out the cash, but where do they get the cash from? He will most likely say, 'they earn it.' Then ask him, 'how do they earn it?' Come back at him with this, 'let me tell you they earn it, because we workers perform work and it is the product of our labor which the company sells to earn the money to pay for your accident. The cost of the services rendered to all of our workers and their families at the first aid room, the nurse and the doctor's salaries, the hospital bills and surgeon fees, and the man's wages or compensation when injured, has to be paid by the company. Now before the company can pay it, they must first earn it, and we workers, every last one of us must do the work to earn the money for the company. As we help to earn it, I believe we should have a right to say how some of these **careless workers** try to spend it. Especially one of that type of workers who says, 'its none of your d— business' when you try to warn him of danger. It is the business of every worker in our mill to speak to or warn another worker who may be careless or not taking **Safety precautions.**"

"We will never win **The Paper Industry Safety Contest** as long as some **headstrong** fool does not pay attention to our **safety rules and regulations. Safety** is just as important as production, for the profits on a few extra pounds of pulp or paper will soon be eaten up with the cost of an accident. The trouble with a great many workers and foremen too, for that matter, is that they can not see any further than the end of their nose and therefore they do not realize the importance of **safety.** They

think they must get out the production in order to make a good showing to the Boss."

"Something like a young fellow that had charge of the construction work in a paper mill where I worked last. He wanted to make a good record for getting jobs done quickly. He thought that the **safety rules** were 'all bunk' because they held him back a little and made him do some things he did not like to do. The safety director, a man who had been in safety work for years and had made it his life work, let him 'have all the rope he wanted.' It was not long before his crew began to have a series of bad accidents, then the Boss called him 'on the carpet' because his crew lost time and cost the company so much money with their bad accidents. Today that young fellow believes in **safety first.**"

"I'll tell you, Bill, those workers and foremen, who are not **safety first** men both on and off the job, are on the downward grade in their careers. When big corporations like the telephone company are strong for it, you can rest assured there must be something to it. Just to-day as I was coming to work, one of their big trucks was stopped on the side of the road and there on the side of the truck was a blue and white enameled sign on which were these words, **'this truck did not have an accident in 1928.'** I'll tell you that is a splendid record and one to be very proud of. Now the same thing applies to us fellows here in the mill; it's mighty fine to go a whole year without having an accident."

"That makes me think; yesterday morning I was talking to Clyde, the pipefitter, and he said something that I had never thought of before. One of the fellows was cussing; Clyde turned to me and said, 'Jim, I have not used a cuss word in three weeks. I'm practicing **safety first.** Yes sir, I've joined the first and original **safety movement.** One of these days I'm going on a long journey and I want to be **safe.** Just wait until our next safety meeting. Believe me, I'm going to tell the boys about the first and original **safety movement.** To be an all around **safety first man** you must not only be safe on the job, but also off the job. I figure that I can be a better **safety first man** if I'm playing safe in my moral life.' Now what do you think of that from Clyde? You know he was a hard boiled sort of a fellow."

"I'll bet he will tell the boys a mouthful, I'm going to be there at the meeting to back him up in what he says."

"Getting back to our subject, **safety.** I feel that the entire responsibility for the success or failure of a **Safety Program** in any pulp and paper mill rests entirely upon the shoulders of the foremen, superintendents and the management. In many cases, the foreman will try to enforce rules which he himself **does not obey.** You know very well, Jim, it is impossible to enforce rules in this fashion, for it is up to the foreman and the superintendent to set the example. When they try to do a stunt like that, the general attitude of the workers is, **'what is right for the foreman and the superintendent to do is right for me.'** In fact, when a man accepts the position of foreman or superintendent he also accepts the responsibility of maintaining **safe working conditions for his men.** His employers do not have the time to go out and personally inspect the department or plant. They expect their foremen and superintendents to do it for them as part of their job responsibility."

"Bill, let me ask you a question. What do you think are the **safety responsibilities of a foreman?"**

"Let's make a list of them, Jim, just so we won't forget."

Safety Responsibilities of Foremen

1—To live up to the safety rules and regulations of the plant.
2—Make his workers live up to them.
3—Give all new workers safety instruction before permitting them to go to work.

"If I had my way, Bill, I would make all new employees take a first aid examination before going to work. In fact, only those who passed and secured a certificate would I consider as eligible for a job. That may seem like a foolish thing to do, but let me tell you, a big cooper company out west employing over fifteen thousand men will not hire a man unless he can show that he has already passed a first aid examination and has a certificate to prove it."

4—He should decrease all unavoidable accidents.
5—Eliminate improper operation of machines.
6—Have safety guards on all belts, pulleys, moving and dangerous machinery.
7—Post danger signs and warnings at all dangerous places.
8—Strict supervision of men.
9—Give the men proper instruction.
10—Keep all guards repaired.
11—Keep careless men off dangerous jobs.
12—Keep tools and equipment in proper condition.
13—Have danger cards put on machinery and other equipment when men are working upon them.
14—Regular inspection of all equipment.
15—See that no one is working on machinery when it is started.
16—Insist upon the men using goggles and other safety appliances when necessary.
17—Not allow a man to work when he is not in good physical condition.
18—Have good lighting for the night shifts.
19—Get the men interested in their jobs.
20—Organize safety committees of the men.
21—Have safety contests.
22—Get the workmen to report all dangerous conditions.

23—Use modern methods that are not so dangerous.
24—Follow up accidents.
25—Not permit men from other departments to loaf in his department.
26—Insist upon his men following instructions.
27—Does not meddle with the other fellow.
28—Is sure he is right before going ahead.
29—Warns people of danger.
30—**Takes no chances—is careful.**

"Jim, here we have been talking about safety and accidents. It has got me to thinking, **what is an accident?**"

"That is a good question to ask, Bill. I'll have to stop and think for a moment before answering in. "How is this Bill? **"An accident is a mishap causing damage to men, machinery or materials."**

"That answer sounds all right to me, Jim. Now I want to ask you another question. **What's the cause of an accident?"**

"That's another hard question, Bill, because there are many causes, I think it might be advisable to make a list of the various causes of accidents."

Causes of Accidents

1—Ignorance
2—Disobedience
3—Bullheadedness
4—Carelessness
5—Too much hurry
6—Playing with dangerous machines and tools
7—Mind not on the job
8—Curiosity
9—Laziness
10—Being too smart
11—Not watching what you are doing
12—Taking a chance on dangerous work
13—Poor management
14—Poor supervision
15—Poor equipment
16—Lack of instruction
17—Fascination
18—Wet floors
19—Nails in loose boards
20—Scattered tools and materials
21—Hot liquor splattering
22—Caustic and chlorine
23—Tools in poor condition
24—Not putting guards back on machinery
25—Disregarding orders and instructions
26—Poor judgment
27—Improper instructions
28—Poor lighting
29—Too familiar with job
30—Worry
31—Loss of sleep
32—Horseplay and wrestling
33—Lack of interest in job
34—Lack of danger signs
35—Thoughtlessness
36—Overworked
37—"Moonshine"
38—Defective machinery
39—Wrong man on the job
40—Excitement
41—Losing your temper
42—Loose materials overhead
43—Explosions
44—Blues—being discouraged
45—Interference by others
46—Loose clothing

"That's a good big list of causes of accidents. I had no idea you could find as many reasons. I want to ask you another question, Jim. **What would you do in case of an accident?"**

"That's another good question, Bill, let's see, in case of an accident, I think that I would—let's write them down again."

In Case of an Accident

1st—In the case of a real emergency, I would give **first aid treatment.**
2nd—I would take the injured to the first aid room.
3rd—I would send for a doctor.
4th—I would investigate the cause of the accident.
5th—I would try to remove the cause if possible.
6th—I would give proper instruction to all the workers regarding that particular danger.

"Here is something I clipped from a magazine. It's a little article that I think worth reading:"

Who Am I?

I am more powerful than the combined armies of the world.
I am more deadly than bullets, and I have wrecked more homes than the mightiest of siege guns.
I steal in the United States alone over $300,000,000 each year.
I spare no one and find my victims among the rich and poor alike, the young and the old, the strong and the weak.
I lurk in unseen places and do most of my work silently.
You are warned against me, but heed me not.
I am relentless; I am everywhere; in the home, on the street, in the factory, at railroad crossings, and on the sea.
I bring sickness, degradation and death, and yet few seek to avoid me.
I destroy, crush and maim; I give nothing, but take all.
I am your worst enemy.
I am carelessness.

Through research in labor turnover, industry is beginning to place its finger on those hidden causes of misunderstanding, suspicion and distrust so often reflected in high turnover and attendant increasing cost. Hon. James J. Davis, Secretary of Labor.

Current Thought by William Sibley

Would an Airplane Pay?

IN some industries, notably the automotive, power, electrical and transportation, it was discovered years ago that the discarding of obsolete machinery and methods were the only true economy. Which explains, in large measure, why those industries now occupy their present position. In these and in a few other industries the executive personnel of the individual concerns are constantly on the alert for any new invention or any new machine which will enable them to lower their total unit cost of production or to increase profit. They are constantly speaking new and improved machinery and methods, even though their installation means the junking of an older machine or method, which is apparently in perfect condition. The economies in time and materials resulting through the discarding of obsolete machinery and methods, far more than justifies the expense involved and thereby puts the individual concern in the front ranks of economical production and in a position to forge ahead of their competitors.

The principle of obsolescence applies as definitely in one direction as in another. It applies as definitely to the executive control of sales as it does to production. Because obsolescence of other forms of transportation for certain types of work is the real test of an airplane's value for any business—why not apply this same principle of obsolescence in appraising the need for or value of this new business tool—the airplane?

The aviation industry is now fairly well entrenched. Much of its experimental work is done. True, a tremendous amount of unguessed development work remains to be done, but regardless of what is yet to come, present day aviation facilities are sufficiently sound to warrant the serious consideration of every manufacturing executive.

Airplanes have been used with marked success by a great many manufacturers and distributors in practically every line of business endeavor. In the publishing field, the A. W. Shaw Company, prior to their merger with the McGraw-Hill people, employed an airplane for business purposes—flying over 52,000 miles in thirteen months—those 52,000 miles involving the coverage of forty states. Such a trip by any other means of transportation would have required from four to six years. In the petroleum industry, George B. Fredell, manager of the Aero Oil Fields Division of the Texas, Pacific Coal and Oil Company, worked almost constantly in his airplane. He equipped his cabin with a typewriter, filing cases and other business equipment and during the course of six months flew approximately 40,000 miles. The officials of that company estimate that in the greater accomplishment the plane made possible, the ship paid for itself six times in the half year period of operation. From one plane owned and operated by the United Fruit Company at Pela, Honduras, came the following telegram:

> "Just finished photographing map of 1100 square miles in 76 hours flying time stop would take ground survey crew six years to accomplish this in Central America stop plane performance 100%."

Such testimonials to the value of airplane operation could be multiplied to the point of fatigue. Wholesale grocery houses, automobile manufacturers, traffic managers and sales managers in countless firms have used planes to great advantage.

Practically all of the planes now in commercial service are used for one definite type of work. A manufacturer or distributor will employ a plane for one of three reasons, sales, research or production. Being limited in this way, it is all the more gratifying to know that the planes have universally given an excellent account of themselves. And considering the fact that almost every paper and pulp mill could press airplanes into dual service—not only for sales work but for survey purposes, it is little short of astonishing that far more paper mills haven't accepted the airplanes as a business tool and put more of them to the work of increasing individual company dividends.

THE PAPER INDUSTRY has in issues passed covered the subject of airplane employment in the work of surveying virgin territory. What can be accomplished by airplane and aerial photography in surveying a large tract of land is little short of astonishing. Like the United Fruit Company's experience, almost every paper mill employing airplanes for survey have found there is about the same relation

—that a plane can do in about 75 or 100 hours what it would take a ground crew six years to accomplish.

Many executives in the paper industry will consider me an over enthusiastic aviation fan when I say that applied to aerial photography in survey work an airplane will pay for itself in the first ten hours of operation—but that statement is none the less true—and probably very conservative.

In addition to the work of aerial survey, there is a still more resultful field for airplane service, namely, sales in sales direction.

During the past twenty-five years competition has grown steadily more keen. Not only have plants vastly increased their production, thereby bringing upon themselves the necessity for much larger sales and distribution, but the application of products has been vastly increased with the result that one industry is now the direct competitor of another.

And what is true of the past twenty-five years will be true in increasing measure during the next twenty-five years. The success, if not the actual existence, of every manufacturing plant at the end of the next twenty-five years will be in a large measure determined upon their ability to show speed and accuracy in both production and sales, but more particularly sales. The fact that you can beat your competitor to your sales destination by six minutes or six hours will become the increasingly determining factor in sales work, and subsequently production.

Airplane Operating Cost

From Russell L. Putnam—a man who has driven a commercial plane more than 60,000 miles during the past year—comes interesting facts and figures concerning the operating cost of airplanes. He says:

> "Where a ship is used solely for business travel under average conditions, a triple motor twelve passenger ship can be operated at a cost somewhere between $0.80 and $1.00 a ship's mile.
>
> "A five passenger, single motor plane will run anywhere from $0.30 to $0.55 a ship's mile.
>
> (In both of these figures, cost of pilot has been included.)
>
> "A two or three passenger, single motor ship can be operated for as low as $0.06 to $0.09 a ship's mile under ideal conditions (and with relatively low-powered engine and hence lower speed), while costs may run from $0.10 to $0.16 a ship's mile for a motor high in power and a high speed ship. These figures are, of course, exclusive of pilot charges, since in the operation of two and three passenger single motor ships, the business man in most instances becomes the pilot.
>
> "In all three instances, allowances have been made for a business type of flying where total mileage would probably run less than on the regular transport run—either mail or passenger."

Averaging the figures that are available it has been found that hangar charges of $1.00 a day are usually rare. At most airports the night's lodging for a moderate size airplane runs from $3.00 to $4.50. While some pilots may be obtained for as low as $100 to $150 a month these also are rare and not usually a paying proposition. Good reliable pilots usually command a salary of from $400 to $500 a month.

Regarding the matter of driving the plane I cannot help but think of the experience I had when a lad of twelve years old—going to church in Mankato, Minnesota. At that time my father had a very creditable turn-out—a flanking span of horses with a very attractive surrey and a bit of blue ribbon on the buggy whip. As usual, Sunday mornings saw the entire family pile into this carriage and on our way to church. On this particular morning we found upon driving up to the church an out-of-town visitor had driven up in his car.

Of course, the visitor didn't drive his own car. Rather, he had his chauffeur, although the car itself was merely a Reo—equipped with four little bicycle wheels and a lever in place of the wheel for steering, Prest-O-Lite lamps and all the rest of the funny devices that went with the early type of automobile.

Coming out of church we watched this visitor being transported down the street by this marvelous machine, an automobile. And particularly did I look with awe upon that super-human being—the man who was driving the car. The chauffeur was the embodiment of all that could be desired because he necessarily had to be a mechanic, an expert judge of distance, cool-headed, fearless and daring, and all those things we now consider as necessities for airplane pilots.

Indeed, my idea of that automobile chauffeur was not far-fetched. It was a close approximation of what the average man in the street thought of all chauffeurs,—yourself included, if you will think back that far.

Then came the time when the owner of an automobile became very much astonished to find that his fourteen year old son or his sixteen year old daughter could drive the car as well as his paid chauffeur. And from that point on, the chauffeuring of automobiles was left to those people who were obligated with the care of too many millions or to nervous old ladies.

So it will be with airplanes. We think today of airplane pilots as being super-human beings who have ability far in excess of the poor, ordinary mortal. As a matter of fact anyone who could drive an automobile can safely pilot a plane if they will but bend the same concentration and application of effort towards this learning that they did to the automobile.

And as for the safety of the ship or the safety of the air mode of transportation, we have the records and statistics of the National Industrial Conference Board, the Metropolitan Life Insurance Company and the Simmons-Boardman Publishing Company for the facts that airplane travel today is safer than any other mode of transportation including rubber heels. That is perhaps an astonishing statement, but it is none the less true—that on a per passenger mile basis, the passengers of airplanes have a smaller chance for injury or death than would those same passengers if they put themselves in automobiles, or motorcycles, steam trains, or in the class of pedestrians.

Airplane travel today represents one of the newer and improved methods of transportation. For all those who have need for accurate land surveys or quick transportation, it represents something that should supercede our present mode of transportation —automotive or rail. Because the principal of discarding otherwise good machinery or methods in favor of better machinery or methods is one of the great underlying reasons for our present day prosperity, we suggest the serious consideration of the adoption of airplane travel for sales managers, production men and the executive personnel.

Eighteenth Annual Safety Congress

Methods of Safety Education and Modern Devices for Prevention of Accidents Discussed by Large Delegation to Paper and Pulp Section

IN the march of industry to keep pace with the progress of the times, no greater asset is recognized, no more vital element enters into its organization or reflects more favorably on its balance sheet, no philanthropy affords larger opportunity for service to mankind—that which cannot be reckoned in terms of dollars and cents—than the preservation of human life and the prevention of accidents to its workers. Thus has "safety" become the universal watchword for industry, and its practice the castellan guard of homes and schools.

The Eighteenth Annual Congress of the National Safety Council which met at the Stevens Hotel, Chicago, the week of September 30 to October 5, was the largest assemblage of safety teachers and adherents that has yet been brought together. By the untiring efforts and efficient management of leaders of the National Safety Council, those in attendance were surprised with many new features. The manufacturers of safety devices which are used and recommended for the safe performance of labor, presented in the Exhibit Hall of the Hotel the finest and most extensive exhibit that has ever been staged at any former meeting of the Congress. Nothing had been left undone to make the Congress an outstanding event in safety history.

There were more than 7,000 delegates in attendance from the United States, Canada, and several other countries, also managers from practically all of the local safety councils in other cities. Sectional meetings were held by the twenty-seven industrial sections of the National Safety Council.

The sessions of the Paper and Pulp Section were full of enthusiasm and highly educational. The registration showed 88 paper mill representatives present and all meetings of the Section were well attended.

FIRST PAPER AND PULP SESSION

The first meeting of the Paper and Pulp Section was called Tuesday morning, October 1, at 9:30, with Chairman Kenneth L. Faist of the Champion Coated Paper Company, Hamilton, Ohio, presiding. Chairman Faist opened the meeting with a welcome to all present and asked each to rise in turn and introduce himself, giving the name of the company he represented. After a few minutes spent in getting acquainted, the Chairman gave a report covering the year's work. He stated that while the Section showed a gain of twenty-eight new members during the year, there had been sixteen cancellations, leaving a net gain of only twelve members. He stressed the point of holding the interest of all members and expressed the hope that the coming year would show no withdrawals. The Chairman spoke of the importance of the Section's News Letter, and conveyed to W. J. Peacock, Northern Paper Mills, Green Bay, Wisconsin, thanks for his efforts as news-editor. The various committees were complimented on their work during the year and the report closed with an appeal for the continued growth of the Section.

Reports from Regional Directors

At this time, the Regional Directors were called upon for a short report.

Alvin Record, of the International Paper Co., Chisholm, Me., and Regional Director for that state, was unable to be present. In his stead, W. J. Brennan of the St. Croix Paper Company, Woodland, Me., spoke of the progress of his state in the promotion of safety. Reference was made to the state's first regional safety conference which was held in November of last year. This movement was sponsored by the National Safety Council and the Department of Labor and Industry of the State of Maine. The first meeting proved so successful that it has been arranged to hold these conferences annually. The second one will be held next spring. Mr. Brennan also spoke proudly of the accomplishment of his company in winning the group prize in the 1928 Contest, as well as the major trophy awarded by THE PAPER INDUSTRY. He also made reference to other honors taken by a Maine paper mill—the winning of the 1927 Group C trophy, as well as the major trophy by the Riley, Maine, mill of the International Paper Company, after contesting with other mills of its group for twenty-nine consecutive months without a lost-time accident. Mr. Brennan admonished the Section that the other mills would need to look to their laurels when competing with mills in the State of Maine.

A. S. Wilson, American Writing Paper Co., Holyoke, Mass., reported steady progress in the development of safety throughout the state.

In the absence of J. J. Tellington, Brown Company, Berlin, N. H., J. J. McGivney, of that company reported that his state had reduced its accidents fifty-six per cent. He stated that considerable activity had been given to a campaign to secure memberships in the National Safety Council.

Samuel Pruyn, of Finch, Pruyn & Company, Glens Falls, N. Y., mentioned the associated industries accident prevention campaign which is put on by New York State every fall. During the six years of this movement, twenty-five to thirty mills are entered each year. Last year, the Piercefield, N. Y. mill of the International Paper Company tied with another mill for first place after thirteen weeks operation without an accident. The Piercefield mill won first prize because of the number of hours of exposure.

Ernest Augustus, Mead Pulp and Paper Company, Chillicothe, Ohio, spoke of the organization of the Ohio Safety Congress two years ago. This meeting has become an annual event, and the dates January 14, 15 and 16, 1930 have already been designated as the time for the next gathering.

In the absence of Miss Emilie I. Raub, Dill and Collins Company, Philadelphia, Pa., and Regional Director for that state, W. A. Gleason of the Hammermill Paper Company, Erie, announced that the State of Pennsylvania has organized and put through one of the greatest safety movements ever put on by any state. Means have been taken to enlist the employers in this no-accident campaign, and the response has been most gratifying. Accidents have been kept down and the campaign felt to be a great success.

F. H. Rosebush, Nekoosa-Edwards Paper Co., Port Edwards, Wis., explained to the conference that on account of the meeting of the Northwestern Division of Superintendents at Wausau during the year, it was deemed unwise to try to hold the regular meeting of the safety conference in the Wisconsin Valley. He stated, however, that plans have already been made to hold the meeting during the spring of 1930, and that the safety work in that locality is being carried on with good results.

Following these reports, Samuel Pruyn, Finch Pruyn & Co., Glens Falls, N. Y., addressed the conference stating that he desired to thank W. J. Peacock for the splendid work he had done during the year in editing the Section's News Letter. Mr. Pruyn put his remarks in the form of a motion that the Congress go on record as thanking Mr. Peacock for his excellent help and co-operation in this work. The motion was seconded by Ernest Augustus and unanimously carried with a rising vote as Mr. Peacock was called to the front of the room.

The Chairman then asked N. F. Bartlett, Hollingsworth & Vose Company, Boston, Vice Chairman for the East, to take charge of the meeting. Mr. Bartlett made some very fitting remarks after which he introduced to the Congress E. W. Corn, Field Representative of the National Safety Council, Chicago, who made the opening address of the conference.

The Irreducible Minimum

Speaking on the subject "The Irreducible Minimum and What Then?" Mr. Corn covered the safety question thoroughly. As the first address of the conference his remarks

were timely, and opened up avenues of thought which brought forth questions and comments throughout the remaining sessions. The speaker referred to the large number of plants who claim natural hazards in their organization, but he clearly pointed out that one of the greatest hazards is the mill that has not tried, and stated it was really surprising the number of mills that had really never tried to reduce their accidents beyond those they are controlling with mechanical safeguards.

In the opinion of the speaker, another serious hazard is the plant that has made a good record and is satisfied. There is no place in the accident prevention game for becoming satisfied. Safety work won't stay put and when the pressure is released the curve will go the other way. There is, then, no irreducible minimum. There must be constant pressure. When the minimum is reached you have only attained the first step in accident prevention. Some plants have brought up the thought that safety pressure wears out. Employees are ridden until they do not respond. This, Mr. Corn stated, is due to hackneyed methods, too much routine. The safety work must be kept interesting, dressed up in new clothes now and then so to speak, or it will lose its punch.

In answer to the question, "What Then?", Mr. Corn called the human relations activity the by-product of a safety accident prevention program. Safety practice properly applied endears an employee to his company and reacts on the labor turnover of the plant. A highly developed industrial community is one that is interested in accident prevention.

Good Housekeeping in Reduction of Accidents

The subject of the next paper on the program was "Reducing Accident Frequency by Good Housekeeping", prepared and presented by Barton S. Edsall, manager, Inspection and Engineering Department, Glens Falls Indemnity Co., Glens Falls, N. Y.

Speaking of the customary antipathy toward accepting any new method that has been designed as an improvement over a pre-existing condition, and citing as an example among others the introduction of rubber tires on buggies and the refusal of the Town Council to permit the first man to drive about town on them for fear that people couldn't hear him coming and he might be run over, a safe practice, Mr. Edsall said, is still looked upon in most plants of the "old school" as a fad, a radical change. But as rubber tires used to be solid and now are hollow, the force of progression showing their makers that improvements could be made and at a profit, so it is with safety in industry. There is always room for improvement—a more modern way of obtaining better results in the reduction of accidents.

Housekeeping, he said, is the foundation on which to build an effective safety program. It is the first point of attack in the reduction of accidents. Good housekeeping protects the three M's so essential to any industrial undertaking—men, machinery and money, and of these three factors in production, the first would seem to be of such vital importance as to justify all the investment of time and money represented by a well co-ordinated program in the elimination of those conditions which tend toward poor housekeeping.

A good housekeeping program affects the morale of employees to the extent that it imbibes them with loyalty of purpose to those who employ them. It gives them the kind of place in which they can take a pride and an enjoyment out of the labors. It eliminates the trait of wastefulness.

Mr. Edsall pictured the commotion which always attends an accident in an industrial plant. To salvage this lost time is not within our power because in order to do this it would be necessary to change the natural response of man toward his fellow in distress, and so efforts must be exerted toward the prevention of accidents by a determined campaign in safe practices and good housekeeping.

Housekeeping conditions to a large extent were the origin of fifty per cent of the accidents reported under falls to the New York State Industrial Commission for the period ending June 30, 1927. Of 18,092 falls in industry for this period, resulting in 220 deaths and 2676 cases of permanent partial disability, forty-eight per cent, including 27 deaths, were recorded as falls on level surfaces, caused by slips and stumbling over loose objects left in aisles and around machines.

Falls were shown, therefore, to be the first point of attack in solving the problem of reducing accident frequency through a more thorough system of housekeeping. Floor conditions in groundwood mills, beater rooms, machine rooms, etc., should be given attention. In stacking rolls in the finishing room, non-skid chucks should be used in lieu of wood blocks or other homemade devices. Trunk equipment is of importance. Rollways were suggested as safe unloading equipment for all trucks. If dollies are in use, employees should be made to understand that riding these when empty is dangerous practice. Hand tools should be maintained and inspected frequently.

At the close of the morning session, Chairman Bartlett asked the members to write any questions they wished brought up for discussion on cards which had been passed around and these questions would be taken up at the opening of the session Wednesday morning.

SECOND SESSION

The Report of the Nominating Committee and election of officers claimed the attention of the members Wednesday morning. Chairman Faist asked M. G. Hoyman, Kimberly-Clark Corporation, Neenah, Wis., chairman of the Nominating Committee to read the report. The report was accepted, after which John Lundrigan made a motion which was seconded and unanimously carried that the secretary be instructed to cast one ballot for the election of the officers, regional directors and committee chairmen nominated by the committee.

New Officers

Officers: General chairman, Samuel Pruyn, Finch Pruyn & Co., Glens Falls, N. Y.; secretary, N. F. Bartlett, Hollingsworth & Vose Co., Boston, Mass.; vice chairman for Canada, A. P. Costigane, Ontario Pulp and Paper Makers' Safety Ass'n, Toronto, Can.; vice chairman for South, G. W. Phillips, Champion Fibre Co., Canton, N. C.; vice chairman for Extreme South, W. H. Jennings, Bogalusa Paper Co., Inc., Bogalusa, La.; vice chairman for Middle West, F. H. Rosebush, Nekoosa-Edwards Paper Co., Port Edwards, Wis.; vice chairman for East, Ben Rogers, Bird & Son, East Walpole, Mass.; vice chairman for Paper Box Manufacturers, H. C. Sackett, Alton Box Board and Paper Co., Alton, Ill. **Regional Directors:** Maine, Alvin Record, International Paper Co., Chisholm, Maine; Massachusetts, A. S. Wilson, American Writing Paper Co., Holyoke, Mass.; Michigan, C. E. Torrance, Bryant Paper Co., Kalamazoo, Mich.; New Hampshire, J. J. Tellington, Brown Company, Berlin, N. H.; New York, R. S. Turner, West Virginia Pulp and Paper Co., Mechanicsville, N. Y.; Ohio, Ernest Augustus, The Mead Pulp and Paper Co., Chillicothe, Ohio; Pennsylvania, Emilie I. Raub, Dill & Collins Co., Philadelphia, Pa.; Wisconsin Valley, F. W. Braun, Employers Mutual, Wausau, Wis.; Fox River Valley, W. F. Ashe, Thilmany Pulp & Paper Co., Kaukauna, Wis. **Committee Chairmen:** Contest Committee, A. Scott Dowd, THE PAPER INDUSTRY, Chicago, Ill.; Health Research, J. J. Plzak, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis. **News-Letter Editor:** W. J. Brennan, St. Croix Paper Co., Woodland, Me. **Engineering Representative:** D. D. Thirkfield, The Sorg-Oglesby-Smith Paper Co., Middletown, Ohio.

Mr. Faist then called the new General Chairman to the front and extended congratulations and his best wishes for the coming year. Chairman Pruyn thanked the Section and pledged his support in a few well-chosen remarks.

QUESTIONS

Following the election of officers, the remainder of the session was given over to a discussion of the questions that had been handed in.

Hot Stock Burns

The first question brought up for discussion was contained in a wire which had just been received from L. J. Parant, manager of the St. Croix Paper Company, Woodland, Maine. His question was "How are grinder men forced or persuaded to wear proper clothing and footwear to eliminate hot stock burns." F. H. Rosebush, Nekoosa-Edwards Paper Co., Port Edwards, Wis., and J. J. Plzak, Consolidated Water Power and Paper Co., Wisconsin Rapids, both stated there had been no trouble in their plants from hot stock burns. R. G. Mc-

Connell, Defiance Paper Co., Niagara Falls, N. Y. reported they had experienced trouble from hot stock burns, and he considered this an important question. Chairman Pruyn offered the suggestion that as there are many methods of grinding pulp, some of which require it to be ground at a low temperature, others at high temperature, stock burns are apparently experienced by the mill which uses the high temperature method.

Mr. McConnell asked that the Chairman appoint a committee to confer on this matter after the session. Chairman Pruyn appointed the following: Leo J. Barrett, Consolidated Water Power & Paper Co.; W. J. Brennan, St. Croix Paper Co., Woodland, Me.; R. G. McConnell, Defiance Paper Co., Niagara Falls, N. Y.; Geo. J. Adams, Continental Paper & Bag Corp., New York, N. Y .

Interesting the Foremen

The following questions were asked by R. G. McConnell, Defiance Paper Co., Niagara Falls, N. Y.:

(a) How do you interest the foremen in the men's general welfare?

(b) Do you hold foremen's meetings regularly, and how often?

(c) Do you investigate the cause of each accident?

The Chairman asked W. J. Brennan, St. Croix Paper Co., Woodland, Me., to state how these matters were handled in their plant. Mr. Brennan stated that since their mill was in a rather isolated section the affairs of the community were rather a matter of common knowledge. The misfortunes of any of the men were well-known to the foremen who do not hesitate to bring them to the attention of the executives if there is a real problem to be solved. In a larger community, of course, the situation would be different.

Mr. Brennan stated that they do hold formen's meetings but have no regular time for them. When their plan was first inaugurated, they held meetings every six weeks. Now a meeting precedes the opening of the contest, then meetings are held whenever enough questions have accumulated that demand attention. Another meeting which takes the form of a banquet or celebration is held at the close of the contest.

At St. Croix the cause of each accident is thoroughly investigated, and in the case of a serious accident, the general manager is called to the scene of the accident immediately, regardless of the time. The superintendent and safety man are also called at the same time the call is put in for the doctor. Mr. Brennan gave a very clear account of his company's method of handling the matters referred to in these questions.

Disinterested Employees

H. C. Hansen, Hummel Downing Co., Milwaukee, Wis., put the question "With more and better safety organization, we have more accidents. What's the cure? How can men be interested in safety when they say, 'to h—l with you and your safety work?'"

Mr. Hansen explained that he came to the conference to get ideas, that his problem was a rather peculiar and difficult one. The mangement was 100 per cent behind him in the safety work, but he appealed to the men to know just what methods they used in handling foreign speaking employees.

Chairman Pruyn made the suggestion that perhaps some of the members who had been in the safety work for some time and were familiar with problems such as Mr. Hansen's, could talk these things over with him following the session and urged them to give him all possible assistance.

Selling Safety to the Manager

"What most effective method can be employed to induce a general manager sold on safety to attend the safety congress and become better sold?" In answer to this question, John Lundrigan, International Paper Co., New York City, outlined to the conference the duties which his company has specified for its managers. Among the duties of a manager is the stipulation that he must personally act as chairman of the safety committee of his plant, and preside at and direct each of the regular safety meetings. In extreme cases where he cannot be present, the meeting is to be postponed until such time as he can be present. Each department foreman is automatically an active member of the safety committee. Superintendents and foremen are obligated to attend these committee meetings even though the meetings are held at a time when they are off duty. Mr. Lundrigan asserted that a man cannot be a foreman in his company unless he is interested in safety. In answer to the question, "How is the manager to be sold?" Mr. Lundrigan said that the safety work was a part of the manager's job. If he did not show the proper spirit or enthusiasm, he had to be removed.

Slippery Floors

"What is the best type of floor for machine rooms where water is used to clean, and men must move fast?" In answering this question, M. J. Mullen, Nekoosa-Edwards Paper Co., Port Edwards, Wis., recommended Mastick floors, manufactured by Johns-Manville Co. This material he said will not slip when wet with water. John Lundrigan, International Paper Company, stated that in their mills they had adopted the American Abrasive Metal Company's compound, and plants had been advised that until this non-slip material was installed, all smooth surfaces should be roughed up as often as necessary. This compound is being used in all new mills constructed. In most of their mills the steps on the calender stacks are also covered with this material. W. J. Brennan, St. Croix Paper Co., Woodland, Me., stated that they use the same material, but that there are many good brands on the market.

Is Hernia an Accident?

The question "Why do we treat hernia as an accident?" was one which promptly brought forth considerable comment. This question has been discussed in previous meetings, and since hernia is regarded as an accident by some of the state compensation boards and is not considered an accident by others, a motion was made by W. A. Gleason, Hammermill Paper Co., Erie, Pa., that this question be submitted to the Contest Committee to decide the question for the next contest. The motion was seconded and carried, and A. Scott Dowd, chairman of the Contest Committee, asked the members of the committee, also the officers and regional directors to attend a special meeting at 3:30 that afternoon in Private Dining Room No. 4 to discuss this subject.

Guarding Paper Winders

The question "Is there a paper winder that is adequately guarded at the point of contact?" was asked by D. Howard, Kimberly-Clark Corporation. Mr. Howard stated that while their winders were guarded, they did not feel they were adequately guarded. Mr. Adams of the International Paper Company stated that practically all of their winder nips were guarded, and he told Mr. Howard he would be glad to give him a sketch showing how this is done.

Is the Guarding of Supercalenders Practical?

Some one asked "Are the nips of your supercalenders guarded, and if so is it practical? Do operators object?" J. J. Plzak, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis., stated that they had recently installed a supercalender and immediately put up 2½ inch pipe placed about one inch away from the roll. It has not retarded production and the employees are glad to use it. John Lundrigan, International Paper Co., New York City, stated that supercalenders are now made in which practically all danger is eliminated except the tendency on the part of the operator to feel of the roll of paper. He believed the way to overcome this hazard is to forbid the men to feel of the roll.

Physical Examinations

Considerable discussion was brought up over the question "What is the attitude of the working man toward physical examinations, particularly the laboring men as a group?" Leo. J. Barrett, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis., believed that in plants where physical examinations are not required, the men object to such a system through fear that although an employee of long standing, he may be thrown out on account of some physical defect. C. S. Crawford, Celotex Company, Marrero, La., referred to a discussion of this subject at a recent meeting of the Industrial Health Division, in which the plan was recommended of examining the men higher up first, going down the line to the men in the plant. This seemed to have a psychological effect and gradually overcame their objections. J. J. Plzak, Consolidated Water Power & Paper Co., Wisconsin Rapids,

The Paper Industry Annual Safety Contest

Final Ranking of Paper and Pulp Mills, Members National Safety Council as of June 30, 1929

GROUP A

Final Rank	Member	Mill	Empl.	Hours Worked	No. L. T. Acc.	Days Lost	Rates		Points	
							Freq.	Sev.	Cr.	Dr.
1	Kimberly-Clark Corp.	Falls	653	861,364	0	0	0	0	600.000	
2	Nekoosa-Edwards Paper Co.	Port Edwards	515	708,874	4	73	5.643	.103	488.783	
3	International Paper Co.	Otis	715	900,024	3	304	3.333	.338	488.117	
4	International Paper Co.	Hudson River	767	1,083,441	7	183	6.461	.169	464.148	
5	International Paper Co.	Marinette	563	707,160	5	133	7.071	.188	450.817	
6	Marinette & Menominee Paper Co.	Marinette	588	781,475	7	19	8.957	.024	446.715	
7	The Champion Coated Paper Co.	#2	795	1,042,900	8	182	7.671	.175	442.983	
8	Kimberly-Clark Corp.	Kimberly	539	702,236	5	225	7.120	.320	428.002	
9	International Paper Co.	Niagara Falls	1,760	2,321,729	19	481	8.552	.216	421.465	
10	The Champion Coated Paper Co.	#1	504	683,160	5	378	7.319	.553	385.845	
11	Kimberly-Clark Corp.	Niagara	910	1,144,947	12	280	10.481	.245	384.482	
12	Canada Power & Paper Corp.	Laurentide	719	884,838	11	153	12.432	.173	363.967	
13	Bird & Son, Inc.	E. Walpole	530	725,085	9	138	12.412	.190	361.462	
14	Dill & Collins Co.	Delaware	848	1,147,478	14	244	12.201	.213	361.150	
15	Mead Pulp & Paper Co.	Chillicothe	522	806,539	10	238	12.399	.295	344.183	
16	Nekoosa-Edwards Paper Co.	Nekoosa	1,011	1,366,469	19	1,333	13.904	.976	205.598	
17	Spruce Falls Power & Paper Co.	Kapuskasing	1,002	1,264,941	25	547	19.764	.432	198.600	
18	Continental Paper & Bag Corp.	Rumford	671	876,346	21	219	23.963	.250	158.948	
19	Northern Paper Mills	Green Bay	743	1,247,422	32	365	25.653	.293	123.617	
20	Container Corporation of America	Manyunk	1,125	1,615,700	42	673	25.995	.417	97.250	
21	Crown Willamette Paper Co.	Camas	878	1,216,261	39	509	32.065	.418		4.082
22	Canada Power & Paper Corp.	Belgo	598	792,955	26	346	32.789	.436		19.152
23	Marathon Paper Mills Co.	Rothschild	586	983,290	36	334	36.612	.340		66.867
24	Bogaluza Paper Co.	Bogaluza	593	793,354	30	178	37.814	.224		67.568
25	The Northwest Paper Co.	Northwest	580	766,555	28	396	36.527	.517		94.952
26	Hoberg Paper & Fibre Co.	Green Bay	784	1,129,289	50	327	44.276	.290		186.263
27	Crown Willamette Paper Co.	West Linn	581	770,466	39	730	50.619	.947		401.483
28	Scott Paper Co.	Chester	966	1,336,528	93	861	69.583	.644		667.048
29	Minnesota & Ontario Paper Co.	International Falls								
30	*International Paper Co.	Fort Edward #2								
30	*Powell River Co., Ltd.	Powell River								
31	*West Virginia Pulp & Paper Co.	Luke								
	Totals		21,055	28,560,826	599	9,906	20.972	.350	102.132	

GROUP B

1	St. Croix Paper Co.	Woodland	559	774,240	2	60	4.042	.073	520.418	
2	The Brown Paper Mill Co., Inc.	Monroe	358	524,029	2	56	3.817	.107	518.552	
3	International Paper Co.	Pierrefield	286	400,512	2	38	4.994	.095	500.932	
4	Kimberly-Clark Corp.	Badger-Globe	284	415,766	3	65	7.216	.156	453.735	
5	Hollingsworth & Vose Co.	West Groton	226	283,027	5	42	17.666	.148	280.898	
6	Cornell Wood Products Co.	Cornell	314	507,500	8	206	15.764	.406	269.598	
7	American Writing Paper Co.	Beebe-Holbrook	281	347,695	6	175	17.257	.503	228.552	
8	International Paper Co.	DeGrasse	351	464,470	10	44	21.530	.095	225.332	
9	Strathmore Paper Co.	Mittineague	266	392,201	8	100	20.398	.255	217.535	
10	Great Western Paper Co.	Ladysmith	248	324,238	7	50	21.589	.154	214.518	
11	The Crystal Tissue Co.	Middletown	208	330,284	7	46	21.856	.144	211.735	
12	The Albemarle Paper Mfg. Co.	Richmond	354	515,100	11	134	21.355	.260	200.752	
13	Mead Fibre Co.	Kingsport	420	642,280	13	381	20.240	.593	163.832	
14	Strathmore Paper Co.	Woronoco #2	230	362,102	6	147	22.692	.561	124.965	
15	Finch Pruyn & Co., Inc.	Glens Falls	322	393,228	11	211	27.974	.537	44.265	
16	Niagara Wall Paper Co.	#1 & 2	227	309,533	10	88	32.307	.284	14.219	
17	Ft. Frances Pulp & Paper Co.	Ft. Frances	411	434,461	14	150	32.224	.345	5.435	
18	American Writing Paper Co.	Crocker	350	275,204	9	89	32.703	.323	1.117	
19	Escanaba Paper Co.	Escanaba	227	320,792	12	111	37.407	.346		81.117
20	The Falls Mfg. Co.	Oconto Falls	273	374,983	14	145	37.337	.387		86.785
21	The Warren Mfg. Co.	Milford	493	688,173	22	1,262	31.969	1.834		238.482
22	Container Corp. of America	Ogden Ave.	397	520,806	24	342	46.082	.657		277.535
23	Container Corp. of America	Red Bank	315	393,664	19	196	48.265	.498		287.415
24	Kenora Paper Mills Co. Ltd.	Kenora	406	464,153	24	297	51.707	.640		368.452
25	Rhinelander Paper Co.	Rhinelander	437	537,108	21	1,155	39.098	2.150		409.968
26	Great Lakes Paper Co., Ltd.	Ft. Williams	244	313,004	18	220	57.507	.703		475.617
27	Bemis Bros. Bag Co.	Peoria	272	356,010	18	638	50.560	1.792		541.332
28	Container Corp. of America	Coated Board	245	298,284	16	535	53.640	1.794		593.000
29	Racquette River Paper Co.	Potsdam	324	436,412	33	395	75.617	.905		811.118
30	Ontonagon Fibre Co.	Ontonagon	256	337,066	19	1,188	56.369	3.525		926.985
31	Hollingsworth & Vose Co.	E. Walpole	289	368,279	24	1,148	65.168	3.117		1005.635
32	*The Michigan Paper Co.									
33	*Moelnee Paper Mills Co.									
34	*The Richardson Co.									
	Totals		9,635	12,714,767	398	9,687	31.302	.762		48.700

GROUP C

1	Marinette & Menominee Paper Co.	Menominee	153	184,356	0	0	0	0	600.	
2	International Paper Co.	Webster	117	157,734	0	0	0	0	600.	
3	International Paper Co.	Winnipiscogee	78	103,420	0	0	0	0	600.	
4	American Writing Paper Co.	Platner-Porter	86	91,066	0	0	0	0	600.	
5	International Paper Co.	Riley	52	51,694	0	0	0	0	600.	
6	Bird & Son, Inc.	Phillipsdale	155	174,749	1	1	5.722	.006	503.635	
7	Kimberly-Clark Corp.	Atlas	139	172,740	1	10	5.789	.058	493.848	
8	Sorg-Oglesby-Smith Paper Co.	Oglesby	138	220,043	2	9	9.089	.041	441.682	
9	American Writing Paper Co.	Parsons	145	191,440	2	17	10.447	.089	411.052	
10	Lowe Paper Co.	Ridgefield	121	172,913	2	16	11.566	.093	391.735	
11	International Paper Co.	Livermore	89	104,839	1	36	9.538	.343	383.868	
12	Lincoln Pulp & Paper Co., Ltd.	Lincoln	55	62,253	1	3	16.063	.048	324.285	
13	International Paper Co.	Montague	198	256,042	4	61	15.622	.238	299.968	
14	Fort Huron Sulphite & Paper Co.	#1	151	217,745	4	55	18.370	.253	251.668	
15	Mead Pulp & Paper Co.	Peerless	88	94,389	2	5	21.077	.053	239.882	
16	Kimberly-Clark Corp.	Neenah	74	101,122	2	26	19.778	.257	227.532	
17	Sorg-Oglesby-Smith Paper Co.	Smith	40	64,257	1	50	15.563	.778	210.948	
18	The Adams Bag Co.	Chagrin Falls	147	198,201	4	68	20.182	.343	206.468	
19	American Writing Paper Co.	Riverside	191	241,163	5	72	20.733	.299	204.617	
20	The Upson Co.	Board	98	131,156	3	14	22.874	.107	200.932	
21	Union Bag & Paper Corp.	Allen	71	94,558	2	27	21.151	.286	199.818	
22	The Gardner & Harvey Co.	#2	101	171,655	4	51	23.301	.297	162.150	
23	Container Corp. of America	Mid West Box	173	241,472	6	92	24.848	.381	122.365	
24	Sorg-Oglesby-Smith Paper Co.	Sorg	167	261,812	6	151	22.917	.577	121.833	
25	The Warren Mfg. Co.	Riegelsville	58	71,610	2	10	27.929	.140	111.182	
26	The Warren Mfg. Co.	Hughesville	78	102,908	3	26	29.152	.253	71.968	
27	United States Gypsum Co.	Oakfield	50	72,521	2	31	27.578	.427	69.198	
28	United States Gypsum Co.	Gypsum	34	62,514	2	9	31.840	.143	45.502	
29	Union Bag & Paper Corp.	#9	71	93,871	3	20	31.959	.213	31.850	
30	American Writing Paper Co.	Linden	179	217,335	7	77	32.208	.354	4.200	
31	The Beveridge Paper Co.	Indianapolis	140	240,387	8	68	33.280	.283		1.832
32	The Gardner & Harvey Co.	#3	62	114,825	4	21	34.836	.183		11.100
33	American Writing Paper Co.	Windsor	138	157,334	6	77	38.135	.489		117.085
34	Bryant Paper Co.	Milham	156	196,275	8	68	40.759	.346		136.962
35	American Writing Paper Co.	Nonotuck	118	166,237	7	81	42.109	.487		182.962
36	American Writing Paper Co.	Albion	133	182,198	8	109	43.908	.598		231.467
37	Strathmore Paper Co.	Woronoco #1	97	115,899	5	83	43.141	.716		238.345
38	Bryant Paper Co.	Bryant	167	213,065	11	69	51.627	.324		314.450
39	The Gardner & Harvey Co.	#1	160	284,274	14	167	49.248	.587		318.633
40	Lincoln Pulp & Paper Co.	Lybster	101	123,261	7	24	56.790	.195		379.000

The Paper Industry Annual Safety Contest

Final Ranking of Paper and Pulp Mills, Members National Safety Council as of June 30, 1929

GROUP C—Continued

Final Rank	Member	Mill	Empl.	Hours Worked	No. L.T. Acc.	Days Lost	Rates		Points	
							Freq.	Sev.	Cr.	Dr.
41	The Warren Mfg. Co.	Warren	135	284,999	16	112	56.141	.393		401.185
42	Union Bag & Paper Corp.	Fenimore	150	196,340	11	95	56.025	.484		414.417
43	The Franklin Board & Paper Co.	Franklin	108	152,393	9	82	59.058	.538		473.967
44	Continental Paper & Bag Corp.	Ashland	92	125,611	7	119	55.728	.119		486.633
45	The Northwest Paper Co.	Frederick	130	169,021	10	155	59.164	.917		538.898
46	Bergstrom Paper Co.	Neenah	175	231,775	6	1,057	25.887	4.560		591.450
47	Itasca Paper Co.	Grand Rapids	129	189,525	13	77	68.593	.406		610.882
48	Bryant Paper Co.	Superior	98	124,549	9	63	72.261	.506		688.683
49	Container Corp. of America	Mid West Box	61	88,256	6	94	67.984	1.065		710.565
50	Bedford Pulp & Paper Co.	Big Island	138	185,165	14	114	75.608	.616		762.802
51	United States Gypsum Co.	Lancaster	36	54,131	4	92	73.895	1.700		914.918
52	Port Huron Sulphite & Paper Co.	#2	123	163,365	16	138	97.940	.845		1173.168
53	Niagara Wall Paper Co.	Niagara Falls	45	59,199	6	106	101.353	1.791		1387.715
54	Robertson Paper Box Co.	Montville	35	40,989	5	31	131.984	.756		1559.065
55	Lincoln Pulp & Paper Co.	Sulphite	124	153,724	24	273	156.124	1.776		2298.065
56	American Writing Paper Co.	Mt. Tom	81	105,737	8	1,078	75.659	10.195		2360.152
57	*Continental-Diamond Fibre Co.									
58	*United States Gypsum Co.	No. Kansas								
	Totals		6,223	8,500,922	314	5,390	36.937	.634		121.282

Complete returns not received.

GRAND TOTAL AND AVERAGES

Total Mills		Employees	Hours Worked	Acc.	Days Lost	Freq.	Sev.	Points Credit	Points Debit
31	Group A—Over 500 Employees	21,055	28,560,826	599	9,096	20.972	.330	192.132	
34	Group B—201 to 500 Employees	9,635	12,714,767	398	9,687	31.302	.762		48.70
58	Group C—20 to 200 Employees	6,223	8,500,922	314	5,390	36.937	.634		121.282
122		36,913	49,776,515	1,311	25,073	26.337	.504	76.05	

Wis., mentioned that he had attended the meeting to which Mr. Crawford referred, and in this discussion it was also brought out that there had been no trouble with the labor unions over the question of physical examinations.

The discussion at this point was directed away from the question into the channels of how to handle physical examinations. There seemed to be a considerable difference in the way the different mills handled these matters. Some mills endeavored to use a man on a job where he was not under a handicap, even though he had some physical defect which unfitted him for other kinds of work. Others reported that they did not accept a man for any duty if he had any particular infirmity. The latter practice was felt to be one which should be approached very carefully, because if industry eliminates the physically unfit, the state will produce legislation to provide for these men. It seemed to be a general practice, however, to reject men with malignant or contagious diseases.

How to Obtain the Best Safety Results

George E. Burns, National Safety Council, Chicago, was asked to speak on the question "How can the maximum results be obtained by the National Safety Council in setting up a safety organization?" Mr. Burns considered the safety problem in each plant an individual one. He outlined the methods of the National Safety Council in setting up a safety organization and stated that any plant desirous of obtaining the assistance of the Council should address their request direct to W. H. Cameron, managing director, 108 East Ohio Street, Chicago.

How to Handle Lumbago Cases

A rather lengthy question was read asking if other mills charge departments with a lost time accident when an employee, due to a kink in his back, is unable to work and is advised by the doctor to take two or three days rest. It was the opinion of some of the members that if a man suffered from lumbago it could easily be traced through his physical examination where this system is in force, and many times this condition is found to be the result of old chronic disorders and cannot be traced to any accidental circumstances.

Should Housekeeping Rules Be Enforced?

The following question "When attempts at educating employees to practice cleanliness and orderliness fail, should specific rules be drastically enforced?" George Burns, National Safety Council, Chicago, cited an instance where one plant had several minor accidents due to men in the shipping room scattering nails on the floor. The safety engineer investigated and found the men were all getting nails from one large box and there was a tendency to drop nails when taking them out of the box and to another part of the room. The problem was solved by giving each workman a small box of nails and a rule drafted that any time the foreman or safety engineer found nails on the floor, the man automatically laid himself off for the day. The second offense was two or three days, and the third offense meant he was out of a job.

W. A. Gleason, Hammermill Paper Co., Erie, Pa., felt this to be a matter of administration. If rules are made and carried out, men will be more careful. He said in his company, a careless man was brought into the employment office and told if he continued such practices he would eliminate himself from the organization. It has even been necessary to discharge a superintendent for such offenses.

Safety Education

A subject which brought forth a number of interesting comments was the following question: "Education is the greatest item in safety. What are some plans to be used in educating employees to safety?" The literature put out by the National Safety Council was felt by R. G. McConnell, Defiance Paper Co., Niagara Falls, N. Y. to be one of the best mediums that can be found for safety education. He told of some methods that have been used in their plant to interest the wives and families of the men in safety. He firmly believed this to be one of the most effective ways to interest the men. Ernest Augustus, Mead Pulp and Paper Co., Chillicothe, Ohio, told of a plan which they are about to put into effect. A very comfortable club room has been fitted up and safety meetings will be held there once each week. Fifty of the men will be given fifteen-minute safety talks at each meeting, and different ones will be invited until all have attended the meetings. Then they will start all over again. This plan, Mr. Augustus said, has been used by the Eastman Kodak Company, and others.

F. L. Irvin, St Croix Paper Co., Woodland, Maine, said that the Elliott service is used in the St. Croix plant, and safety education in the schools is paid for by the company. Motion pictures on safety are held every month with good attendance. They have classes in first aid, and "The Safe Worker" which is published by the National Safety Council is given out each month.

Should Employees be Paid for Balance of Shift?

After putting the question "How many mills adopt the policy of paying employees for the balance of the shift on which they are injured?" the Chairman asked those that could answer in the affirmative to hold up their hands. This indicated that fifteen mills do pay their employees for the balance of the shift on which they are injured. C. S. Crawford, Celotex Co., Marrero, La., raised a further question as to whether the mills paid a man for time lost on the way to

the doctor. Chairman Pruyn stated that they pay their men for all lost time. John Lundrigan, International Paper Co., stated that it is the policy of his company to pay all of a man's expenses, and if he is in need of special treatment which requires him to make a trip to the city to consult specialists, all of his expenses are paid, and if necessary, some one is sent to accompany him.

Contests and Their Effect

At this point, the question came up as to whether or not the conducting of safety contests has a tendency to bring men back to work before they have properly recuperated from an accident. Several members spoke on this subject and there seemed to be a wide difference of opinion voiced in the discussions. John Lundrigan, International Paper Company, stated that in their safety organization, the medical care of employees has extremely careful attention. The advice of the doctor is relied upon in most cases, and it oftentimes occurs that in the doctor's opinion a man is better off to return to work as the financial help of drawing his pay helps him to recover more quickly. The discussion at this junction took up the subject which has caused considerable agitation and comment and that is, whether a mill participating in a contest should return an injured man to some job he can perform when his injury is such that he cannot go back on his specific job. George Burns, National Safety Council, stated that while the Paper and Pulp Section's contest rules did not so read, other sections had amended their rules to read that a man may return to a job that he can perform 100 per cent under the doctor's consent.

Wearing Shoes on the Paper Machine

"Is there any mill represented whose men all wear shoes on paper machines? If so, how is it accomplished and what is the make of shoe used?" Leo J. Barrett, Consolidated Water Power & Paper Company, stated that all of their men wear shoes on the paper machine. This has eliminated slipping and many minor injuries. The men wear any make or kind of shoes they desire except canvas shoes which are not permitted. J. W. Youngchild, Nekoosa-Edwards Paper Co., Port Edwards, Wis., spoke of the difficulty they had experienced in getting the men to wear shoes. It was finally necessary to adopt this practice officially and insert it in the book of rules. They had some trouble enforcing this rule, but as the system became established, the men like the idea. Ernest Augustus, Mead Pulp & Paper Co., Chillicothe, Ohio, stated that they had no rule in regard to the wearing of shoes but it was the practice of the men to wear shoes at all times except during washups and changing of wire. The wearing of shoes at these times was felt by them to create something of a hazard. L. W. Rhodes, Kimberly-Clark Corporation, spoke of their difficulty in persuading the men to wear shoes. In his opinion, going without shoes had been the result of habit rather than a protective measure. He mentioned that their men wear rubber suits and boots during washups.

Securing the Superintendent's Co-operation

The last question to be brought up for discussion was: "What would you do if you are sold for safety, but cannot get co-operation from your superintendent when the rest of the company seems sold to it?" The answer of R. G. McConnell, Defiance Paper Company, was to bring the superintendents to the conference. One safety man brought four superintendents. He felt a superintendent could not listen to all of the papers and discussions at these meetings without being sold to safety. Chairman Pruyn felt that if management is really sold to safety, they should put it up to the superintendent that safety goes along with production and quality for which they hold him responsible. If he remains unsold, the answer is to get a new superintendent. John Lundrigan believed that the whole matter is up to the management, and that the question resolves itself into one of comparative costs.

THIRD SESSION

In the absence of Chairman Samuel Pruyn, F. H. Rosebush, vice chairman for the Middle West presided at this meeting. Chairman Rosebush stated there was some unfinished business to be taken up before proceeding with the regular program. N. F. Bartlett, Hollingsworth & Vose Company, Boston, addressed the conference and made a motion that a rising vote of thanks be extended to the retiring chairman and officers, also those who arranged the program for the Eighteenth Congress. This motion was seconded by Ernest Augustus, Mead Pulp and Paper Company, and was unanimously carried.

The Chairman announced that there was a representative from a British Columbia paper mill present who was attending the conference for the first time. He asked R. H. Scanlon, Powell River Paper Co., Powell River, B. C., to stand while he introduced him to the members. A motion was made, seconded and carried that Mr. Scanlon be asked to serve as Regional Director for the Pacific Coast territory. Mr. Scanlon rose and addressed the members by saying that he believed there was a great opportunity for work to be done in the West, and although he felt much surprised at receiving the appointment, he would exert his best efforts to further the safety work in that section.

The subject of having a paid secretary to carry on the work of the Section was brought before the conference. This matter had been discussed at previous meetings of the Section and committees had been appointed. John Lundrigan believed something further should be done on this matter. R. G. McConnell, Defiance Paper Company, agreed with Mr. Lundrigan and reminded the members that while there were something like 1300 paper mills in North America, the Section had only made contact with 265 of these. It will require the constant effort of some one who can give his undivided time and effort to this work if the Section is to grow. This matter, of course, seemed to be principally a question of financing, since the members were of one mind, that the services of a secretary would stimulate and promote the work of the Section. This resulted in a motion by M. G. Hoyman, Kimberly-Clark Corporation, Neenah, Wis., that the Chairman appoint a committee whose duty it would be to make a canvass of the mills and work out some financial plan to provide the services of a secretary. The following committee was appointed: W. J. Brennan, St. Croix Paper Co., Woodland, Me., Ernest Augustus, Mead Pulp & Paper Company, Chillicothe, Ohio, and M. G. Hoyman, Kimberly-Clark Corporation, Neenah, Wis. The Chairman stated that the committee would elect their own chairman and also add to their number if it seemed advisable.

At this time the matter of plant magazines was brought up and practically all of the representatives of mills that publish employees' magazines arranged for an exchange.

Contest Committee Reports

Before proceeding with the program, the Chairman asked A. Scott Dowd, chairman of the Contest Committee to give a report of the special meeting held by the committee Wednesday afternoon, October 2. Mr. Dowd read the following recommendations which the committee submitted to the Section:

Recommendation (A)—The following clause to be specified on forms covering the next contest: "A hernia, to be included in the contest as a disability, shall be a complete and sudden breakdown which totally disables a man at the time and place of the accident."

Recommendation (B)—Revision of contest rule defining a lost time accident: "A lost time accident shall be any accidental injury arriving out of and in the course of employment, causing death, permanent injuries (such as the loss of use of a finger, eye, etc.) or loss of time other than the remainder of the day or shift on which the accident occurred. This is interpreted to mean that if no permanent disability exists and the injured employee returns to A REGULARLY ESTABLISHED JOB, which he CAN PERFORM 100 per cent, the case shall not be counted as a lost time accident. It must be understood that this can be done only with the approval of the doctor."

The motion was made, seconded and carried that the committee's report be accepted. The tendering of these recommendations renewed the discussion on "What is an Accident?" and in view of the differing opinions, the motion was made, seconded and carried that these resolutions be voted upon separately. This was done, with the result that both resolutions were accepted by a good majority.

Safety and Efficiency

"We are still pioneering in the attempt to secure maximum efficiency in our industry", said N. H. Bergstrom, treasurer, Bergstrom Paper Company, Neenah, Wis., in discussing his subject "Paper Mill Safety and Efficiency", the first paper scheduled on Thursday morning's program. It seems as though we spend an endless amount of time and energy on engineering new things, he said, and when apparently we have untangled all the knots, chased away all the bugs and know exactly what we are doing, we are very much dismayed, at times, to discover that we have just begun to find the trouble in some new problem. Quite often it is a very serious accident that really shows us the error in our engineering.

In the handling of materials, the conveyor system with all its machinery, is obviously far more safe than the hazards which attend a crew of men working on the unloading platform, yet safety inspectors are justly critical of such an installation when they demand that it should be made as safe as possible. Proper engineering in handling materials being one of the quickest ways to save money, there should be co-operation between the safety man and the engineer in the study of the material-handling problem, making as much of it mechanical as possible. The same thing is true in purchasing of all types of machinery. The engineer whose desire is to secure a maximum efficiency, goes to great extremes in getting reliable machines, while the safety man goes to the same trouble in securing a safe machine. The two of them should go hand in hand.

To sell management a safety device might sometimes entail forgetting the safety argument and discussing it on the terms of good engineering only. You may shout till you're hoarse about the hazard of an open gear train, said Mr. Bergstrom, but show the management how you can save $500 to $1000 a year on power by using a speed reducer and then watch the gear hazard go.

Mr. Bergstrom invited consideration of the effects which the thought prevailing in this modern, highspeed world, "Let machinery do it instead of man power", often has upon man, concerning his safety and efficiency. Productive thinking on the part of any man is directly a by-product of his daily work. The energetic man while working at great speed will develop tenacity toward the hard jobs which confront him, while the loafer will drop the jobs which call for the property of stick-to-itiveness. Reducing this to a present day example, a fireman who is exceedingly busy shoveling in coal, raking out clinkers and doing other jobs, is probably very alert all of the day, and for that reason the accident hazard is less pronounced in this man. Then put him into a modern boiler plant where he is confronted with meters, valves and other machinery to operate, which does not call for manual labor, and unless he is particularly adapted to the job, he is very apt to become lazy and be an extremely unsafe man to have around the plant. On the other hand, a man that is more or less of the analytical type of mind, will see all kinds of pictures being written for him by those same meters and will be constantly alert to correct conditions in the plant, making for efficiency. A great deal of care should be taken in selecting a man suitable for the right job in order to avoid this peculiar type of laziness which the modern world is apt to develop.

A few years ago, the attitude of an executive who knew considerable and still wanted to learn more, was quite commendable, but at the present age this same attitude is needed and demanded among what was formerly called the laboring class. Working men should be encouraged to read and study, for being mentally active, they will be safer workmen.

Trophies Awarded to Winners in the 1929 Safety Contest

Major trophy awarded by The Paper Industry

Effect of Chrysoidine Upon Operators in Newsprint Mills

J. J. Plzak, chairman of the Committee on Health Research of the Paper and Pulp Section and safety engineer of the Consolidated Water Power and Paper Co., Wisconsin Rapids, Wis., next presented some data following

Group trophies awarded by National Safety Council. Left to Right—Group A, Group B, Group C

Trophy Winners and Sponsors in 1929 Safety Contest

Left to right: Seated—L. W. Rhodes, John Gertz, Kimberly-Clark Corp.; John Lundrigan, International Paper Co.; A. B. Hansen, Marinette & Menominee Paper Co.; W. J. Brennan, St. Croix Paper Co. Standing—Edward B. Fritz, Publisher, The Paper Industry; Geo. E. Burns, Safety Engineer, National Safety Council; A. Scott Dowd, Chairman Contest Committee

research work which he has just completed in studying the effect of chrysoidine (peach color dye used in newsprint) upon workers who handle it.

Chrysoidine is a very commonly used analine dye. There is not a great deal of information available regarding it and practically nothing of medical importance. The dye is known to produce anemia after prolonged contact, just as all analine compounds do.

For making experiments on the immediate effects of chrysoidine dye injected with increasing per cent solutions subinterveniously into white rats and observing the results, grateful acknowledgment was rendered to Dr. Louis L. Plzak and Dr. W. Lawrence, of Chicago.

First, a solution of the dye increasing in strength from 0.2 to 1 per cent and using from 10 cc. to 30 cc. of it was injected subinterveniously into normal, healthy white rats. Under these experiments, the dye was excreted by the rats through the kidneys and appeared in the urine. No toxic effect occurred. A microscopic examination made of the kidneys failed to show destruction or any kidney ailments; no albumen was detected. Further necropsies (examination of killed animals) failed to show any destruction of the vital organs examined. No skin lesions (skin rash) appeared. The rats were shaved and dye rubbed on these sections. This procedure did not cause a dermatitis. A coloring of the skin was very evident. The color became a light sepia, almost brown, after it had been rubbed a while.

Following these examinations, the three men in the mill who handle the dye were put under periodical physical examination. Dr. Mortensen of Wisconsin Rapids did the examining. They were sent to the doctor every three months and the following examinations made: (1) Amount of body surface stained by dye; (2) Blood pressure, systolic and distolic; (3) Heart; (4) Lungs; (5) Hemoglobin; (6) Red blood cell count; (7) White blood cell count; (8) Urine; (9) Abdomen (10) Extremities.

Dr. Mortensen studied the general history of the patients and also inquired regarding any temporary ailments the men might have had since last examined. All of these things were carefully considered by the doctor before any conclusions were made. Mr. Plzak distributed a table giving the history of the three men examined over a period of one year and an idea of the results obtained.

Insufficient Data to Draw Conclusions—Making tests on three operators only is not sufficient to draw any satisfactory conclusions, and appeal was made to other safety men who have operators handling the chrysoidine dye to assist in drawing up statistics over a period of several years. One examination per man every three months is sufficient and the results of 100 operators over a period of three or five years could bring about a definite conclusion. Examination charts and advice on procedure in the matter was offered by Mr. Plzak to those who are interested.

LUNCHEON MEETING

Throughout the business sessions there was a suppressed interest, a note of expectancy which came to a climax as the members gathered in the North Assembly Room on the third floor of the hotel Thursday at 12:30 o'clock for the Paper and Pulp Section Luncheon. This was indeed a festal occasion. The delicious luncheon and expressions of good fellowship on every hand will long be remembered by those present. But the greatest event of all followed the luncheon—the awarding of trophies to the mills that had won first place in THE PAPER INDUSTRY Contest.

Vice Chairman Rosebush, who presided, introduced A. Scott Dowd, chairman of the Contest Committee. Mr. Dowd spoke of the excellent showing made by the mills entered in the 1929 Contest, and presented the following outstanding facts and figures which showed a most favorable comparison with the two previous years:

Outstanding Facts

1. 119 mills were registered in 1927, 122 registered in 1928 and 123 in 1929.
2. In 1927, 33,786 persons worked 43,802,804 man hours for an average of 1,296 hours per person.
3. In 1928, 36,357 persons worked 47,673,816 man hours for an average of 1,348 hours per person.
4. In 1929, 36,913 persons worked 49,776,515 man hours for an average of 1,348 hours per person.
5. During 1927,—1,468 lost time accidents resulted in 28,396 days lost; in 1928,—1,355 lost time accidents caused but 26,368 days lost; while in 1929,—1,311 lost time accidents caused 25,073 days lost.
6. In 1927 average Frequency rate is 33.514. The 1928 average Frequency rate is 28.422. The 1929 rate of 26.337 represents a reduction of 21.4 per cent over 1927 and a reduction of 7.3 per cent over 1928.
7. The 1927 average Severity rate is .649. The average rate is .533. The 1929 average rate is .504 and represents a reduction of 22.3 per cent over 1927 and an 8.9 per cent reduction over 1928.
8. During 1929, 58 mills had a Frequency rate below average compared to the 62 mills in 1928. In 1927, 60 mills had a rate below the average.
9. During 1929, 80 mills had a Severity rate below average compared to the 78 mills of 1928 and the 75 mills of 1927.
10. The 1929 ratio of persons employed to lost time injuries is 27 to 1, with 19 days lost per injury. These figures also apply to 1928. The 1927 ratio amounted to but 23 to 1, with 19 days lost per injury.
11. In 1929, the ratio of non-fatal injuries is 187 to 1, in 1928, 150 to 1, and in 1927, 147 to 1.
12. In 1929, 6 mills completed the period without a lost time

accident as compared with 8 mills in 1928 and 6 mills in 1927.

Trophies Awarded

The National Safety Council trophies to winners in Groups A, B and C, were awarded by Major Henry A. Reninger, President, National Safety Council, Chicago. Major Reninger conveyed to the Section the appreciation of the National Safety Council for the splendid work carried on during the past year, and when in turn he presented to the three winners, the beautiful plaques, the award for the best no-accident record in each respective group, one could not judge which of the three recipients showed the most surprise.

Group A Winner—With thirty-one mills entered in this group, the laurels went to the Falls mill of Kimberly-Clark Corporation, Niagara Falls, N. Y. As Major Reninger presented the trophy to J. L. Sensenbrenner, manager of the plant who stood with six of his men to receive it, he complimented the men highly for their splendid work and he emphatically stated that money spent in conducting safety contests and sending representatives to these conferences could not but bear good fruit.

Group B Winner—Again the St. Croix Paper Company, Woodland, Maine, heads Group B. This mill took the group prize in the 1928 Contest as well as the major trophy. In accepting the presentation of the trophy from Major Reninger, W. J. Brennan of that company spoke very earnestly of what safety means in their organization. To them it is not just a matter of dollars and cents. It is rather a crusade, so to speak. Mr. Brennan felt that a large measure of credit was due their plant manager, L. J. Parant, who has championed the safety work in the organization and had the support of the plant workers 100 per cent.

Group C Winner—With five mills in Group C having a perfect no accident record, the honors fell to the Marinette and Menominee Paper Co., Menominee, Mich., this plant showing the greatest number of hours worked. With fifty-eight contestants in this group, the winning company may justly be proud of its record. A. B. Hansen, of that company was called upon to receive the trophy, but he modestly passed this pleasure on to F. J. Hofher, superintendent of their plant, who was present, and who, he said, was largely responsible for this fine record.

Certificates—Eight mills in the three groups made records that entitled them to a certificate of merit. These were presented by Major Reninger to representatives of the following mills:

Group A—	Nekoosa-Edwards Paper Co.,	Port Edwards, Wis.
	International Paper Co.,	Otis, Maine
Group B—	Brown Paper Mill Co., Inc.,	Monroe, La.
	International Paper Co.,	Piercefield, N. Y.
Group C—	International Paper Co.,	Webster Mill, Orono, Me.
	International Paper Co.,	Winnipiseogee Mill, Franklin, N. H.
	American Writing Paper Co.,	Platner-Porter Div., Holyoke, Mass.
	International Paper Co.,	Riley, Mass.

1927 Trophy—After the group trophies and certificates had been presented by Major Reninger, the next presentation, while not a surprise, was of no less interest. This was the award of the silver loving cup to the Riley, Maine, mill of the International Paper Company, for its winning record of twenty-nine consecutive months with no accident. Not only did this mill win the 1927 Contest which was brought to a close May 31, 1929, but its record is still unbroken. A complete story of how this mill won the contest was published in the August, 1929, issue of THE PAPER INDUSTRY.

The Paper Industry Major Awards

Following Major Reninger's closing remarks, Edward B. Fritz, publisher of THE PAPER INDUSTRY was introduced by Chairman Rosebush. "Dad" Fritz, as he is lovingly known by all of the members, has given whole-hearted support of the safety work by sponsoring the Contests of the Section.

Representatives of Paper and Pulp Mill Winners of Prizes in 1929 Safety Contest

Left to right: Front Row—*John Gertz, L. W. Rhodes, Kimberly-Clark Corp.; John Lundrigan, International Paper Co.; A. B. Hansen, Marinette & Menominee Paper Co.; W. J. Brennan, St. Croix Paper Co.* Standing—*J. W. Youngchild, Nekoosa-Edwards Co.; W. E. Stilp, W. C. Baker, J. L. Sensenbrenner, H. R. Miller, A. L. Gross, J. R. Sutfin, Kimberly-Clark Corp.; H. V. Madden, F. H. Rosebush, M. J. Mollen, H. Daven, Nekoosa-Edwards Co.; G. J. Adams, International Paper Co.; F. L. Irvin, St. Croix Paper Co.; F. J. Hofher, P. J. Sievert, Alec Ouimette, Marinette & Menominee Paper Co.; F. H. Astley, A. S. Wilson and Leo Peltier, American Writing Paper Co.*

Mr. Fritz expressed his pleasure at the achievements attained by the contestants during the year. He did not overlook to pay tribute to the mills down the line, who had done their best although they did not reach the prize-winning mark. They had made a record and their work was not lost. As Mr. Fritz turned to lift the grand prize, he told of the method by which the major prize winner is determined by the judges, but his hearers anxiously awaited the announcement he was about to make—the decision of the judges. As the trophy, a handsome plaque bearing in relief the image of a knight in bronze with the safety emblem emblazoned upon his shield was displayed, one read the inscription—"Won by Kimberly-Clark Corporation, Niagara Falls, N. Y., during period Jan. 1—June 30, 1929." This crowning event of the contest was followed with much applause and requests for talks from Kimberly-Clark representatives.

Again was J. L. Sensenbrenner, manager, taken by surprise, but he assured the conference that the demonstration there would not compare with the celebration that would be held by the men in the Falls mill when their delegation returned home with not only the group trophy, but the grand prize as well. He introduced to the members the six men from his plant who were in attendance, and particularly spoke of the efforts of L. W. Rhodes, to whom he gave credit for some of the safety rules put into practice at the plant. Mr. Rhodes modestly spoke of their work and among other things mentioned a system he had figured out to keep one thinking safety. He said it was surprising how little a foreman really thought about safety unless he organized himself and put it down in the form of a report. His system was to make a record every day of safety items, either observations made or ideas conceived and keep a record of these. In this way, the thought is trained along the line of carefulness and watchfulness.

The hour drew to a close, but Mr. Fritz announced that he had yet one more pleasant duty to perform. He asked John Lundrigan, industrial superintendent of the International Paper Company to come to the front of the room, and then presented to him the beautiful silver loving cup, the major trophy awarded by THE PAPER INDUSTRY for the 1927 Contest. The judges had unanimously voted that the Riley Mill of the International Paper Company had deservedly won this cup, as well as the group cup given by the National Safety Council. Mr. Lundrigan said he felt a deep appreciation for the honors just awarded the different mills of their company. Such results are the harvest of earnest, untiring effort and a carefully worked out safety plan.

Thus was the Eighteenth Annual Conference brought to a close, and as the members rose and sang "Auld Lang Syne", it was not with the spirit of a task finished, but of a greater task begun—carrying the messages from the conference to the men in the mills at home.

Doughty Awarded A. P. & P. A. Fellowship

To R. H. Doughty has been awarded the Fellowship for the current year at the Forest Products Laboratory, Madison, Wisconsin, which was recently established by the American Paper and Pulp Association and the Technical Association of the Pulp and Paper Industry.

The association is fortunate in having a vigorous committee of high technical standing acting in liaison with the Forest Products Laboratory, consisting of R. H. Stevens, Bjarne Johnsen, W. G. MacNaughton, R. G. Macdonald and J. E. Alexander. Through the close co-operation of this committee with the Pulp and Paper Section at Madison, the opportunity was presented and accepted to establish this new association activity.

In reality, this action merely reflects in a tangible manner the rapidly growing interest of the pulp and paper industry in increasing its fundamental technical knowledge of the very complex materials and processes upon which its business is built. Chief among these obviously is precise knowledge of the basic properties of pulps in their relation to the properties of paper as required by the use to which the ultimate consumer puts the product.

It is in this field, one of common interest to the whole association, that the fellowship work has been carefully planned and started under the direction of Clark C. Heritage, who until very recently was in charge of the pulp and paper work at Madison. The preliminary studies on the relation of pulp properties to paper properties has already pointed the way to new and valuable relationships. The Advisory Committee is constantly in touch with the work and will receive progress reports for both associations at regular intervals.

Mr. Doughty has been a member of the Forest Products Laboratory staff since January, 1926. His work has been concerned with studies of pulp bleaching and of the physical properties of pulp. He is a graduate chemical engineer from the University of Maine in the class of 1925. In June, 1928 he obtained a Master's Degree in Science from the University of Wisconsin.

Through Mr. Doughty's former association with the laboratory staff and his acquaintance with the research technique of the laboratory, his availability for this fellowship is indeed fortunate.

Paper Investigations by Bureau of Standards

Paper Cellulose Determinations—A number of alpha-cellulose determinations have been made by the Bureau of Standards on various kinds of paper, to compare the method in use at the bureau with that proposed by the American Chemical Society. These indicate that the American Chemical Society method for cellulose materials cannot be applied satisfactorily to paper without modification of the form of the sample and the method of filtering it. Owing to the resistance paper offers to disintegration into its component fibers, it was found necessary to grind the test specimen to a cotton-like form, as when the specimens are simply cut into small pieces as specified in the American Chemical Society method, the extractions are not complete.

For filtration of the finely-ground material, the use of cloth in a Buchner funnel was found necessary, instead of using a Gooch crucible as described in the American Chemical Society method. Otherwise, the two methods give test results that are in good agreement. The Bureau of Standards method is the less time-consuming.

Further study of the copper-number determination indicates that a modification proposed by Braidy gives increased accuracy. He replaces the Fehling solution with a solution of copper sulphate made alkaline with sodium bicarbonate and sodium carbonate, and heats for three hours in a bath having a temperature of 100 deg. cent. By means of this modification of the bureau method, the average deviation of individual results from the mean, in the case of fourteen samples tested, was reduced to 1 per cent. Without the modification the deviation was 6 per cent.

Cellulose From Sugar Cane—At the request of the manufacturer, a sample of alpha-cellulose made from sugar cane was tested for its suitability for use in the rayon industry. Alpha-, beta- and gama-cellulose, copper number, KOH-solubility, ash and iron determinations were made. From the results of these tests, the pulp appears to be quite satisfactory for rayon use, so far as the properties tested are concerned. The alpha-cellulose content was high and the copper number quite low, indicating a high degree of purification. The beta-cellulose content and the portion soluble in caustic potash further bear this out. The beta-cellulose made up the difference between the alpha-cellulose content and the total fiber, and the portion soluble in KOH was low. The ash content was very low. Some iron was present but it was a very slight trace.

Utilization of Cellophane Waste—In response to a published request for suggestions as to how waste trimmings from cellophane might be utilized, the bureau has received a suggestion from a German manufacturer of a paper shredding machine that this material be shredded into paper-wool form and used for packing and decorative purposes.

Announcement is made by the Scott Paper Co., Chester, Pa. that sales for the year up to August 25 show a 13 per cent increase. Sales in August, 1929, increased 22½% at a rate considerably in excess of the average rate of increase for the year to date.

T.A.P.P.I. Holds Fall Convention at Richmond, Va., and Washington, D. C.

A Well Attended Meeting Marked by Technical and Social Features of Great Interest, as Well as Visits to Plants and Government Bureaus

STUDIES pertaining to the reduction of losses in processes of manufacture and by deterioration of apparatus and waste of material, bulked large in the papers and discussions at the fall meeting of the Technical Association of the Pulp and Paper Industry which began at the Jefferson Hotel, Richmond, Va., on Tuesday, September 24, and ended at Washington three days later. The attendance of members was up to expectations, and local visitors and guests, including ladies and nonmembers, brought the total registration at Richmond to 240. Ladies at all T.A.P.P.I. meetings are now more in evidence than formerly, a circumstance reflected in the greater social features of these meetings, though sociality never takes precedence over the technical and business programs.

Nearly 100 members and guests went on to Washington after the close of the meeting in Richmond on Thursday evening, September 26, and were well rewarded for the time spent there. The Wardman Park Hotel, headquarters for the Washington party, is unique among the hotels of the Nation's capital on account of its situation and architectural plan. The hotel, which consists of a series of radiating extensions from a central building, so that every room, equipped with a bath, is an outside room, is far enough from the center of Washington in the direction of Rock Creek Park to provide a quiet, restful atmosphere, something which was greatly appreciated by the members after three strenuous days of sightseeing and technical sessions in Richmond.

The Paper Section of the Bureau of Standards was the objective of the party on Friday morning, September 27, following a visit of inspection to the mill of the District of Columbia Paper Manufacturing Company at K and Potomac streets. Sightseeing busses were provided at hotel headquarters in Washington to transport the visitors from point to point. The location of the District of Columbia Paper Manufacturing Company's plant did not appear to be as well-known as it ought to be to the bus drivers and one busload was taken all over Washington before the mill was reached, because the driver misunderstood the direction as "Potomac Avenue and K street", at the opposite end of the city, and some time elapsed before he got his bearings. However, it proved a pleasant excursion, the enjoyment of which would have been heightened if a guide had been aboard to point out the different places of interest on a route which numbered among its attractions the White House, many noted government buildings, including the Capitol and Library of Congress, as well as other buildings of historic importance.

In Washington, inspection trips of considerable educational value were made to the Paper Section of the Bureau of Standards and to the Government Printing Office, besides the District of Columbia Paper Manufacturing Company, reference to which will be made in the detailed story of the meeting.

OPENING SESSION AT RICHMOND

It was 9:45 a. m., Eastern Standard Time, on Tuesday, September 24, when P. H. Glatfelter, president of the association, opened the first sitting of the business sessions in the auditorium of the Hotel Jefferson, Richmond, Va., by a few well chosen words of greeting, with the promise of a busy three days meeting in the old capital of the Southern Confederacy. He complimented the local committee on the program provided and called upon B. K. Steadman, the chairman of this committee, to outline the social events and program of visits to local mills. Following this, Mr. Glatfelter called attention to the presence in the hall of several former officers of the association, mentioning them by name and asking them to rise in the following order: Fred C. Clark, George E. Williamson, George K. Spence and W. G. MacNaughton. The regular business of the meeting was then taken up, reports of committees being called for.

Corrosion Losses in Pulp Mills

J. D. Miller of the York Haven Paper Company, reported for the Committee on Corrosion and Waste. He said that the activities of the committee had been confined to process corrosion in both the acid and alkaline pulping procedures. Since the sulphite corrosion loss was greater than the loss observed in the sulphate process it had been given most attention.

Mr. Miller said it was desirable to determine the corrosion resistance of numerous alloys on the market. He described a method of testing alloys for their corrosion resistance. An improvement over methods of suspending the samples from a strainer consisted of the use of a suitable pipe nipple in which the samples are supported on glass rods, which in turn are supported by two plates of metal running parallel to the axis of the nipple and drilled to receive the rods. The chamber in which this is carried on is attached to a by-pass in the relief line, so that the samples are exposed to conditions approximating operating service.

Mr. Miller said he felt that co-operation between the manufacturers of resistant materials and the mills would be mutually beneficial and expressed the hope that members of the association would aid the committee by replying to questionnaires.

Discussion of the Report—W. G. MacNaughton discussed the report. He made the point that the committee in its next report should give methods of overcoming steel corrosion, corrosion in the tubes of evaporators, etc., which was coming up in plants all the time. He also thought it would be well for the committee to include in its report the findings of other associations on questions of corrosion and its prevention.

Chairman Glatfelter urged the members to co-operate with the committee by giving their experience in preventing corrosion, as well as details of any efforts made that had proved abortive. He said that in his mill after considerable experimentation a paint was now used which was a satisfactory preventive of corrosion. He added that it would be desirable for the committee to study the best kind of piping to be used in the white water lines, whether copper, wood, or lead.

The next report called for was that of the Committee on Paper Testing, B. W. Scribner chairman.

Work of the Paper Testing Committee

Mr. Scribner announced that there had been prepared by him for final consideration by the Paper Testing Committee, proposed official methods for determination of fiber composition of paper, content of paraffin, and content of starch.

The dot-count method of microscopical determinations of fiber was declared to be suitable as an alternative method.

Modified Tests—The proposed new method for determining the amount of paraffin contained in a given paper makes provision for quantitative separation of paraffin from other constituents commonly found in paper. In the proposed new method for starch estimation, the modified Fehling's solution and the Benedict's solution eliminate the necessity for the use of indicators and give a much more definite end point. As the modified Fehling's solution is the same as that used

by a number of laboratories for determination of the copper number of paper, the use of it eliminates the necessity of having two different Fehling's solutions where copper numbers and starch determinations are both made.

Standard Roofing Felt Tests—The methods of the Committee on Roofing Felt and Paperboard for testing unimpregnated roofing felt have been prepared in standard form by the Paper Testing Committee. These include, in addition to the ordinary strength, weight and thickness tests, the kerosene test for saturating capacity, and the oil penetration test and xylol test for rate of saturation.

Committees Reorganized—Mr. Scribner announced the reorganization of several subcommittees. Miss Kiely has resigned as chairman of the Committee on Chemical Methods, her place being taken by P. H. Wehmer. The Committee on Grease and Water Resistance formerly headed by Allen Abrams has been divided into separate subcommittees for these two subjects and R. C. Griffin is now in charge of grease resistance work, white water resistance having been taken over by P. W. Codwise.

Mr. Reed is Studying Paper Porosity—E. O. Reed, chairman of the subcommittee on resistance of papers to printing inks, is making an extensive study at the Government Printing Office of the relation of oil absorption of newsprint to the porosity of the paper. The results so far obtained indicate, Mr. Scribner said, that porosity may be used as a measurement of the ink resistance of such papers. Inasmuch as porosity tests can be made more simply and accurately than oil penetration tests, this is regarded as an important development. It was noted in the report that difficulty was being experienced in finding a successor to C. E. Libby in the further development of microscopical analysis.

There was no discussion of the report, except that J. D. Miller inquired if any member had tried the Hammond method for testing the greaseproofness of paper.

Permanence Qualities of Paper

For the Committee on Fine and Special Papers, Dr. Jessie E. Minor, of the Writing Paper Manufacturers' Association, reported that the committee was still considering the question of permanency of paper. No written report had been made, but it was suggested that a joint meeting be held next February of the Cellulose Committee and the Committee on Fine and Special Papers for the consideration of the subject.

Progress of Cellulose Committee

In a report of the Cellulose Committee which was read by the secretary in the absence of Chairman Parsons, an outline of the work in hand was given, and mention was made of the proposed joint meeting or symposium with those interested in fine and special papers at the annual meeting next February.

Donald E. Cable, chairman of the Committee on Physical Standards for Pulp, asked leave to defer the reading of his report until Wednesday morning when a "Pulp Evaluation Symposium" was to be held.

C. C. Heritage, chairman of the Committee on Paperboard, reported progress for this committee and got permission to present a paper on "The Measurement of the Strength and Stiffness of Fiber Boards by Means of Static Bending" in advance of the time set for it on Wednesday morning. This paper was a joint product of Mr. Heritage, who was formerly in charge of the Pulp and Paper Section of the Forest Products Laboratory, Madison, Wis., and is now on the Technical Staff of the Oxford Paper Company; E. R. Schafer, associate engineer, and L. Z. Carpenter, junior chemist of the Forest Products Laboratory. Before presenting the paper, he explained that the Committee on Paperboard was only a year old, having been organized to continue the work of the Roofing Felt Committee. He outlined the work of the various subcommittees of which three were now functioning: one on plastics and the properties of paperboard as well as on methods of arriving at the numerical determination of the furnish. The second subcommittee, headed by Mr. Wyman, of Bird and Son was engaged in a study of variables at the wet end of the machine, while Mr. Harvey, of Gardner-Harvey Company, headed the third subcommittee on an investigation of raw materials and stuff, interest centering around the sampling of waste papers and refining variables. Conditions affecting refining which have already taken place in the waste paper before it reaches the board mill will be studied by this subcommittee and it is expected that contributions from all subcommittees will be presented at the annual meeting.

Alkaline Pulping Processes

E. S. Hinman, chairman of the Alkaline Pulping Processes Committee, made a careful and detailed report for this committee when called upon. The committee, which was made up of the soda and sulphate subcommittees had held a meeting in May to reach an agreement about policies, and as a result it was decided (1) To send the questionnaire to all pulp producers for information regarding methods of handling wood from pile or car to digester and respecting the advantages of weighing wood delivered to digesters; (2) To ask the co-operation of the Forest Products Laboratory and other research laboratories in a study of the "critical temperature" for woods used in the manufacture of soda and sulphate pulp, with the view of determining characteristics of strength and bleachability of these pulps; (3) Questionnaire to sulphate pulp producers asking for methods of expressing sulphidity, reduction of sulphate, calculation of production and why each mill considers its method proper; (4) Strength tests on soda pulp and sulphate pulp, the pulp to be supplied from a common source so that methods of strength testing may be compared and standardized; (5) Questionnaire on bleaching and the factors of shrinkage, concentration of bleaching liquor, density—low or high, and approximate bone-dry percentage; systems of bleaching (Bellmer, Wolf, etc.) and feasibility of using white water in diluting stock delivered to screens before bleaching.

It was stated that thirty-eight replies had been received to the questionnaire on the handling of wood and wood measurement. Critical temperature will be studied by the Forest Products Laboratory, the proposed method being outlined.

Mr. Hinman stated that replies had also been received to the questionnaire on sulphidity, but in disappointingly small number. An investigation of sulphate has been undertaken by one of the sulphate subcommittee members, while the questionnaire on washing, screening and bleaching of pulp is being handled from the secretary's office under the Service to Members plan.

Progress reports were made by George K. Spence, for the Pulp Preparation Committee, and by A. P. Gardner, for the Committee on Training for the Industry.

Tappi-Appa Fellowship Report

After thanking the Forest Products Laboratory and the Bureau of Standards for co-operating so actively with the Technical Association of the Pulp and Paper Industry, Chairman Glatfelter introduced R. H. Stevens, chief chemist of the Bogalusa Paper Company, who reported for the joint committee on the fellowship work of the Forest Products Laboratory. He said the committee was enthusiastic in its work and much gratified over what had been accomplished in determining fundamental variables in pulp fibers and why these fibers displayed characteristic effects in the formation of paper. From the work that was being conducted, it might be possible in future to tell from a pulp in suspension what the paper would be.

Character of Fiber Determines Paper—C. C. Heritage discussed the work that was being done by the Fellowship Committee. The committee is attempting to demonstrate that the property of a sheet of paper is determined by the character of the fiber, and it was explained that the work had to do with the recognition of four types of each property, as with the property of tensile strength which was divided into sheet strength, structural strength, formation strength, and fiber strength.

Mr. Heritage said that work at the Forest Products Laboratory and been chiefly directed toward determining the physical law governing the relation between the structural strength of the sheet and the percentage of solids by volume in the sheet. Check work was being conducted along the lines reported by E. P. Cameron, of the Canadian Forest Products Laboratories. By the time of the next annual meet-

ing the committee would be able to say whether or not it was on the right track.

Next on the program was the reading of papers.

The Patentability of Inventions

In the paper entitled "What Is Patentable in Papermaking", presented by Charles W. Rivise, a Philadelphia patent attorney who is an associate member, a lengthy compilation was given of rulings governing the patentability of inventions.

The dictionary definition of the word patent is "open", and in order to take advantage of the protection afforded by the patent statutes, the inventor is required to make a full and exact disclosure of his invention, complete enough to enable any person to make, construct or use it. The inventor is not bound to state all the advantages and functions of his invention, or all the uses to which it may be put. If he sets forth the principles governing his discovery, it is immaterial to the validity of the patent whether or not the statement is correct. It is important, however, to set forth the thing to be done in such a way as to enable anyone skilled in the art to reproduce it. Instances of decisions bearing on this were given.

The vital part of a patent specification is the claims and great skill is required in drafting the claims, for each claim is considered a separate and independent invention. One may be valid, all the rest invalid. The claim that is good remains good, being unaffected by the presence of claims that are bad. One claim may be infringed and other claims not.

No valid patent can be taken out unless the subject matter can be expressed in one or more of the following ways: (a) An art; (b) a machine; (c) a manufacture; (d) a composition of matter; (e) an improvement on an already existing art, machine, manufacture or composition of matter; or (f) the design for an article of manufacture. Definitions of these terms were given as based on patents that had been the subject of litigation.

A review of unpatentable discoveries revealed some interesting decisions bearing on inventions and discoveries that are not subject to patent protection owing to lack of patentable subject matter. Abstract forces of nature, causes and effects are included in this category. Thus the discovery that ether would produce insensibility to pain was held not patentable, and patent protection was denied to an alleged inventor who discovered that blocks of ice placed on edge melted less rapidly that when laid flat, since no monoply could be granted on one of the forces of nature. In this way Morse was denied exclusive right to his discovery that electromagnetism can be utilized as a motive power for making intelligible marks at a distance.

The courts have ruled that though neither the cause nor its effect is patentable by itself, the means by which the cause is applied to produce the effect is patentable. The principle of nature itself is not patentable, but its utilization by means of an art, machine, manufacture or composition of matter when properly expressed in one of these forms, is patentable.

Quoting a decision of one of the courts the difference between simplicity and obviousness in inventive ingenuity was touched upon. "Many things appear easy after they have been explained, and doubtless many a man has wondered why he failed to think of some apparently simple device or improvement that yielded a fortune to the one who did and revolutionized industry. The simple fact is that the average person sees things as they are, and he who has originality of vision enabling him to visualize defects and the means of overcoming them should receive adequate reward."

Some interesting examples were cited of the double use of inventions in a way that rendered the method nonpatentable. Pertinent to the paper industry were the lifting of sheets of paper by suction when it was old to lift buttons, pills and nail heads in that manner; applying process of coating paper, etc., to shoes when the operation was merely coating.

Examples of new adaptations that were held to be more than a double or analogous use and hence patentable included a dryer felt and other fabrics, as in the case of Barrell v. Fitchburg Duck Mills.

Aggregation or lack of combination is not patentable, which is to say that the component parts or elements of a device or process must coact with each in such a manner as to produce a unitary result which is not merely the aggregative effects of the individual element. Instances of this were cited but few appeared to be of direct papermaking interest.

The paper was discussed by A. E. Cofrin, president-manager of the Fort Howard Paper Company, Green Bay, Wis., who spoke of the Eibel case, which in turn led Mr. Rivise to review the Downingtown-Millspaugh case and the validity of circuit court decisions in other circuits than the circuit in which the case was decided.

Strength and Stiffness Test for Fiber Board

The formal paper by Heritage, Schafer and Carpenter on "The Measurement of the Strength and Stiffness of Fiber Boards by Means of Static Bending" was then read in abstract by Mr. Heritage who illustrated by means of lantern slides details of the apparatus used in carrying out the tests for stress and strain of paperboard, as well as the device for measuring the thickness of specimens.

The method suggested for the evaluation of the strength and stiffness of fiber board and its application were fully explained. In summarizing his paper, Mr. Heritage said that the properties of strength and stiffness were determined by a static bending test from which the moduli of transverse strength, rupture, and elasticity could be obtained. The method was said to be simple and inexpensive and sufficiently accurate for the purpose. Besides being applicable to the testing of boards it could be used in the testing of pulps for strength, having been found to have a particular value in the evaluation of groundwood pulp.

Progress of Winder Development

James A. Cameron, president of the Cameron Machine Company, Brooklyn, a member of the association, discussed in interesting fashion, the progress of winder development as applied to rolls of newsprint and book paper. The importance of a firmly and compactly wound roll from center to periphery is appreciated by newspaper publishers who aim to overcome delays in the press-room.

New problems in the winding and rolling of paper have arisen with the development of the modern high-speed printing presses. There are limits to which the speed of a printing press can be used depending largely on the capacity of the roll of paper to unwind smoothly and dependably without break. The head of the mechanical department of a great New York daily newspaper told Mr. Cameron that badly wound rolls was the greatest cause of grief and delay in the press-room. The thing desired is a roll that will unwind at top speed from the outside of a roll down to the core without jump or vibration or web break.

Newspaper press-rooms are no different from the press-rooms of magazine, catalogue and book printers or any other users of roll paper which is unwound or fed into high-speed printing presses. Mr. Cameron stated that a poorly wound roll makes as much or more trouble than poor paper.

The method of slitting the paper was discussed, the problem of developing and introducing more efficient roll winding methods being no more important than the development of improved methods of slitting or cutting the paper. After describing the old methods in use he explained the principle of score cut slitting. In the score cut the slitters are applied either directly to the undersurface of one of the two drums of the machine, or to a special drum just below the front drum. Instead of the paper passing up between the two drums, it passes over the surface of the front drum and both of the drums are maintained at a fixed constant surface speed with respect to each other, obviating the necessity of any manual or automatic means for varying the speed between the two drums. The density of the roll of paper is controlled by the pressure of the riding roll which is driven in time with the surface speed of the drums so that the sheet is made compact by pressure rather than by pull on the web which is sometimes excessive in the old style two drum winders. With an automatic system of weighting the riding roll a heavy pressure is applied at the start of the winding when the roll of paper is light, thereby causing the central portions of the roll to be absolutely dense and firm and of any degree

Picture taken at the fall meeting of the Technical Association of the Pulp and Paper Industry, Richmond, Va., September 24, 1929

of hardness required. This same degree of hardness is maintained throughout the roll seeing that the pressure of the riding roll, automatically decreases as the diameter of the roll of paper builds up.

With the two-drum method a bow spreader was necessary, but this is eliminated in the new type of winder described by Mr. Cameron through the use on the front drum of a system of grooving which permits of automatic separation of sheets at their edges before being wound up.

Mr. Cameron's Paper Interestingly Discussed—Several members took part in the discussion of Mr. Cameron's paper which excited a good deal of attention. He showed a thorough familiarity with the subject and instead of reading his prepared paper, he called for lantern slides and explained in clear and interesting fashion the workings of the Camachine winder, drawing attention pointedly to the need of keeping tension hard on the riding roll of winders.

Chairman Glatfelter asked Mr. Cameron what material he would recommend as a marker for breaks, and a decided boost for the Cameron winder was supplied by A. D. Coferin, of Green Bay, Wis., who said that when a roll of paper had been returned to his mill as faulty on account of soft spots he had it rewound on a Cameron winder to the satisfaction of the printer. But the most convincing testimony to the efficiency of the winder was given by Edward W. G. Cooper, superintendent of the Don Valley Paper Mills, Toronto, in his discussions of a remedy for hard edges on paper roll. Mr. Cooper mounted to the platform and drew on a blackboard illustrations of the operation of rewinders to show how breaks could be eliminated by adjustment of tension rolls. He said there was a need for a four-drum winder giving an independent tension for each roll.

Cure for Hard Edges on Rolls—Mr. Cooper said that the cure for hard edges on rolls was not to be found in the management of the winder alone. Every stage of the papermaking process should be under intelligent control. He advised taking a strip from deckle edge to deckle edge at each press and testing for moisture and caliper every inch across. If this proves uniform there will be no trouble, but if the paper draws more on the edges, as it does on some machines, and the calenders do not pinch hard enough, the roll will have a hard edge.

The riding roll, or floating roll, as Mr. Cooper described it, which is a feature of the Cameron winder eliminates hard edges on a thick or bulky sheet.

Visit to Mills

The sitting was then adjourned for luncheon, after which visits were paid to the mills of the Standard Paper Manufacturing Company, the Albermarle Paper Manufacturing Company and the Manchester Board and Paper Company.

Welcomed by Mayor of Richmond

In the evening there was a dinner at the Jefferson Hotel, at which the city's welcome was extended by the Hon. J. Fulmer Bright, Mayor of Richmond, who gave a fascinating account of the history of Richmond during the 322 years of its existence, full of literary allusions and sparkling with gems of oratory, as when he wound up a scholarly address by saying that "the valor of this nation sleeps in the soil of Virginia", being a reference to the great men of Colonial and later times who hailed from Virginia and found their last resting place there.

Mr. Ryland Was Toastmaster

J. F. Ryland, vice president and general manager of the Standard Paper Manufacturing Company, presided as toastmaster and was felicitous in his

introductions. President Glatfelter, in acknowledging the welcome of Mayor Bright expressed appreciation for the way in which the local committee had handled all arrangements for the meeting.

Toastmaster Ryland made a plea for a larger membership in the Technical Association from the Richmond section, which was now represented by four members only.

R. G. Macdonald, secretary of T.A.P.P.I., brought the speechmaking to a close with an acknowledgment of the high educational value of the meeting from the standpoint of a patriotic American. He said he had never before realized the wealth of historical associations connected with the city of Richmond and he spoke of a visit to Hollywood Cemetery where the remains of three presidents of the United States were interred.

Adjournment was then made to the auditorium of the hotel where dancing was enjoyed until a late hour.

Pulp Evaluation Symposium

Scheduled for the opening sitting on Wednesday morning was a "Pulp Evaluation Symposium" under the chairmanship of Donald E. Cable. The sitting was opened by President Glatfelter who exhibited the golfing trophies to be competed for at a golf tournament on the green of the country club of Virginia in the afternoon and urged all members to take part in the tournament.

The discussion of strength determinations of pulp was opened with a paper by the chairman representing the report of the Committee on Physical Standards for Pulp. He read extracts from the report, beginning with a statement that the work of the committee for the current year was merely a start on a large program of work looking to the adoption of standard methods for the making of sheets in the unbeaten test and after processing of pulp for various intervals of time. By building up the work in stages it was hoped to thresh out each feature and come to some agreement before going on to the next. One difficult question to settle was the best basis weight of sheet for accurate physical test.

Moore's Review of the Literature

Doctor Cable called attention to a review of the literature of wood pulp testing methods which had been prepared by W. F. Moore, of the U. S. Testing Company, consisting of abstracts of sixty-three technical contributions and commended it.

The adoption, in the Official Methods of Paper Testing of T.A.P.P.I. of a section reading as follows, was recommended:

"Results shall be reported in points per 100 lb. basis weight (25x40, 500) which are obtained by multiplying the results secured according to the official methods, by 100, and dividing the product by the basis weight (air dry at 65% R. H. and 70° F.) of the test sheets.

"Bursting strength, tearing strength, folding endurance, and tensile strength shall be reported in this manner. Per cent stretch shall be reported as in the official method for determining stretch of paper."

Standard Pulp Testing Methods

As a result of a questionnaire sent up by the committee it was decided by the committee to adopt a set of standard pulp testing methods embodying the following general features:

I.—Method of sampling pulp.

II.—Apparatus and method used in making and conditioning the sheets.

III.—Preparation of sheets from disintegrated but unhydrated fiber (for unbeaten, felting or initial test).

IV.—Preparation of sheets from both pebble mill hydrated and disintegrated fiber after two or more time interval.

V.—Preparation of sheets from small beater processed fiber with stock for the sheets being removed progressively from the beater at regular time intervals.

VI.—Provision is to be made for the testing of the pulp sheets according to one or more of the following types of physical measurement: (a) Bursting strength; (b) tensile breaking strength; (c) tearing strength; (d) folding endurance.

There was no discussion of the report and the reading of papers on the program was then taken up.

Routine Testing of Pulp

In the paper by H. A. Rothchild, A. Ely and F. Poppe entitled "The Beater Method of Evaluating Pulp", these engineers of the Kimberly-Clark Company described the equipment, testing methods and interpretation of results with the beater method of testing sulphite pulp as practised in the laboratories of the company for eleven years past. The test is used as a control in cooking sulphite pulp. The equipment consists of a small laboratory beater with control bedplate, sheet mould, couching roll, hydraulic press and pump, steam drying plate, paper trimmer, conditioning oven and balance and a Mullen pop tester.

The roll of the beater turns at 500 to 525 revolutions a minute. As the capacity of the beater is 1½ lb. its size can be imagined. The sheet mould is equipped with a 90-mesh wire, with a deckle area 6 by 6 in. Suction is applied by means of a water leg 85 in. in length from the wire to the outlet; the drainage rate is about 400 cc. a second.

Details of the construction of the couching cylinder, drying plate and conditioning oven were given and the various steps in the testing of pulp by the beater method were clearly and minutely stated.

The conclusions of the authors all favored the beater maximum strength test as a procedure for routine control.

Discussion of Pulp Evaluation Processes

There was an animated discussion of both Doctor Cable's report and the paper by Rothchild, Ely and Poppe, as read by Mr. Ely. In reply to the query, "How do you differentiate between a suitable and an unsuitable pulp", Mr. Ely said that this was determined by the grade of paper to be made and suitability of the pulp therefor. He said that inequalities of pulp often arose from irregularities in the arrangement of the beater roll which interfered with beating and lowered the strength of the pulp. Thus on one occasion it was observed that a bearing that had not been oiled got hot and threw the roll a little off on one side. It was always well when uniform results in beating were not obtained to examine the roll and bearing as well as the bedplates to ascertain if something is out of line.

Range of Bursting Strength

Fred C. Clark inquired as to the average range of bursting strength, both initial and at maximum and was told that unbeaten sulphate pulp ranged from four to five points Mullen test and thirty-eight to forty-two at maximum. Mr. Clark also inquired in regard to the keeping of notes concerning changes in freeness in connection with the strength tested and was informed that this was done but not as a regular thing.

In further discussing the paper as read by Mr. Ely, Mr. Clark said that he had found that there was a direct relation between an increase in bursting strength up to a certain point and then a decrease in bursting strength. He asked Mr. Ely if he had found any relation between the increase of weight and increase of bursting strength. Speaking for himself he said he was inclined to the belief that increase in weight was in direct proportion to increase in bursting strength, especially in bond and ledger stock for the reason perhaps that the short fibers increase with beating and in thick sheets stand on end, while they lie flat in thin sheets. Mr. Ely agreed with him.

Linn Bradley asked why a temperature of 35 deg. cent. had been fixed upon for experimental work and was told that as 35 deg. cent. was slightly above river temperature it could be maintained all the year round.

J. D. Miller took part in the discussion, saying that in his mill the same principle was followed as that set forth by Mr. Ely, but not for routine control, and that the tests were conducted at ten-minute intervals before weight was put on the beater roll. Vance P. Edwards followed Mr. Clark, who had inquired how near the maximum strength obtained in tests could be approached by actual machine operation, by asking whether dependence was placed upon a maximum strength shown by the test or upon the type of curve developed in the test.

Mr. Ely said there was no near approach in actual machine operation to strength recorded in laboratory tests, and as to Mr. Edward's query, said that both initial strength

tests and the rate at which strength is developed were used.

Mr. Edwards inquired if it had been found that changes in the sharpness of the flybars affected the strength of the pulp and Mr. Ely said that if the corner of the bar was too sharp the strength of the pulp would be low. The remedy for this was the application to the flybars of fine sand paper where it was needed.

Further questions by Mr. Edwards related to the advantages of a 1½ lb. beater as compared with a 5 lb. beater, the consistency of stock used and speed of the roll.

Advantage of a Small Beater

Mr. Ely said he had no experience with the operation of a 5 lb. beater but he thought that the smaller beater had the advantage on account of the narrower beater plate. As to consistency of stock this is used at 1 per cent. There was a relation between the speed of the roll and test results, any increase in roll speeds having the effect of shortening the test. The ratio used at the Kimberly-Clark laboratories was 500 to 525. He said that the diameter of the beater roll in the 1½ lb. beater was 8 in. and that the speed of the beater roll did not slow down as the pulp came up to strength. A period of 10 minutes beating in a 1½ lb. beater was equivalent to regular beating time for book paper.

Another Procedure for Testing Pulp

Under the title "Standard Procedure for Testing Pulp", Harry C. Bradford outlined a method of testing pulp samples that had been worked out by the pulp committee of the Kalamazoo Valley mills.

Samples of pulp are taken from the shipments at the same time as samples are taken for the moisture test and in the same way. For the beater test 540 grams of bone-dry pulp are taken. The samples must be dried to bone-dry weight in a drying oven. To the pulp in the beater 24 liters of water is added. In determining the amount of water to be added to the pulp the difference in weight between the wet pulp and the 540 grams of bone-dry pulp is subtracted from 24 liters and the difference taken as the volume of water to be added. Thus 24 liters is always used and the beater consistency held at 2.25 per cent bone-dry stock or 2.5 per cent air-dry stock. The beater is charged without any weight on the bedplate arm, 10 liters of water being run in first and the pulp added after being torn into small pieces. Additional water is then run in as needed in portions of 5-5-2-2 liters, less the water in the pulp. The time for this operation varies from ten minutes for wet sulphite to thirty minutes for dry kraft.

The beating time is taken from the point when the standard weight is put on the bedplate arms, and the beater is kept revolving at a speed of 410 r.p.m. The weight of 4072 grams is so placed that the set screw fits into the hole in the end of the bedplate arm. At each beating interval a 500 cc. sample is withdrawn from the beater without interrupting the beating. Three sheets are made using 100 cc. of stock per sheet. The unused portion of pulp is returned immediately to the beater.

Details were given of forming the sheets, drying them and bringing them to constant humidity. A selection of sheets having the best formation is made for popping. Five pops are taken on each sheet, one in each corner and one in the center. In expressing strength units, the weight in grams of a 5¼ x 5¼ sheet is converted to a basis weight of 25 x 38-500. The average of the five pops is divided by this basis weight to give a strength unit expressed in points per pound ream 25 x 38-500. The average of this value for two sheets is taken as that of the beating interval and the usual graph of strength against beating time is plotted from it.

The equipment used by the Kalamazoo Valley Committee consisted of a standard Valley Iron Works Niagara type adjustable bedplate beater; Valley Iron Works sheet mold, Egan design, equipped with a Pemberthy water ejector and vacuum gauge, and Valley Iron Works hydraulic laboratory press (Egan design), operated by a manual hydraulic pump used for testing boilers and equipped with a standard pressure gauge reading to 250 lb. per square inch.

Correlation to Ball Mill and Beater Tests

Among those who discussed Mr. Bradford's paper was Dr. Hellmuth Schwalbe, a son of the well-known German cellulose chemist, Prof. C. G. Schwalbe, of Eberswalde. He asked if an average was struck of all pop tests to arrive at a mean figure, and was told that the higher figures were always taken as par. Mr. Abrams asked if results of the tests were affected by the pressure on the roll and was informed that standard pressure must be used. In reply to a question by George K. Spence regarding the correlation of ball mill and beater tests, Doctor Cable said there was need of this where the sheets are made by both methods and he would welcome a paper on the subject for the annual meeting with open arms.

Uses of the Tests

Linn Bradley said the two papers by Rothchild and Bradford respectively impressed him as the production in one instance of a producer of pulp and in the other of a purchaser of pulp, and he asked why one method was not sufficient. Doctor Cable said that both tests had their uses, the one being a control test for every day routine purposes and the longer one to determine qualities more accurately. The committee was now at work on the formulation of a physical standard test for pulp.

Canadian Contribution on Estimating Pulp Quality

Chairman Cable announced the receipt of a paper on estimating pulp quality from James E. O'Connell, a member of the association who is connected with the Lake St. John Power & Paper Company, Ltd., Dolbeau, P. Q., Canada. It is Mr. O'Connell's opinion that a satisfactory processing or beating method of evaluating pulp is incapable of development. He said it was an accepted fact that the ultimate strength of a pulp hinged on its initial strength, so that it would appear logical to adopt an initial method for all pulps and necessary to adopt it for pulps that were to be used with scarcely any processing. Mr. O'Connell described the method followed at the Lake St. John plant, giving details of treatment. With his method, the test sheets are not seasoned in constant humidity but are first made bone-dry, then placed between sheets of blotting paper having a definite moisture content and put back in the press so that the moisture content will show an average of 5 to 6 per cent. The weight of test sheets was made the same as the paper for which it is to be used—32 lb. 24 x 36-500. Details of sheetmaking, couching, pressing, drying and testing were given.

Study the Literature

Vance P. Edwards said it was impossible to estimate maximum strength from initial strength, and Mr. Abrams counselled a study of the literature for the selection of right methods so as to combine them into a standard method for the consideration of the association. Doctor Cable said this was exactly what was being done at the present time.

Weight and Moisture Tests for Pulp

Clarence P. Robinson, salesmanager of The Borregaard Company, Inc., New York, presented a paper on the subject of weight and moisture tests. Mr. Robinson said he was a great believer in what he called original joint tests. The report of the chemist testing the pulp should always be absolutely impartial and it would be ideal to have his test always accepted by buyer and seller, but perfection was impossible of attainment, and there would always be disputes. A point test on the dock might obviate these disputes and eliminate unnecessary claims and expense. When large tonnage was involved, either party should have the right to demand a point test on the dock.

The point was made that when a pulp with a high moisture content was stored for any length of time and this pulp was subject to testing prior to delivery to the customer, it was often difficult to reach an agreement with the buyer as to the air-dry weight, particularly when a few cars only from a complete shipment of many cars were made the basis for an actual test. Mr. Robinson said: "Invariably the first few cars reaching the customer are from among the outer tiers of the stack of pulp. Naturally the outside bales are drier than those on the inside of the stack where the moisture is retained and the pulp has not been subjected to atmospheric changes. The buyer in checking his bill gets the impression that he is being overbilled in weight; whereas, if the entire consignment, or the greater portion of it, had been made the

actual basis of test, the air-dry weight would doubtless have substantiated the original test, as pulp will invariably dry out faster than the test will increase."

In view of the differences in manner of weighing and testing pulp as practised by different chemists, he made the recommendation that a competent man be appointed by a joint committee of the T.A.P.P.I., A.P. & P.A. and the Association of American Woodpulp Importers, to visit chemists approved by these associations for the purpose of inspecting their equipment and methods and co-operating in perfecting a more uniform system for doing this work.

Specifications in the Contract

There was a fair discussion of Mr. Robinson's paper. One point brought out by Mr. Abrams was that in ordering pulp it should be made a part of the contract that the pulp must meet the standard association tests. This had been the rule with his company and results were always satisfactory. R. H. Stevens emphasized the importance of contract provision by citing a case reported in the **Papier-Fabrikant** where a consignment of pulp had been rejected on account of a microscopical difference in length of fiber from that specified.

Development of the Wagner Furnace

The status of the Wagner furnace used in recovery work in sulphate and soda mills was set forth by the inventor himself in terms that left no doubt as to the success of the apparatus. After six years of work the Wagner recovery furnace has been perfected to give desired results. At the extraordinary heat developed in the furnace the waste soda and sulphate residues are completely consumed, only the chemical being recovered as a smelt. The gases leave the furnace at temperatures varying from 1,900 to 2,300 deg. Fahr. and necessarily carry off with them a certain amount of chemical as smoke but this is collected in a boiler of special design, the primary function of which is to cool the gases. Illustrative details and comparative figures will be found in the author's paper which is reproduced in full on another page.

Patent Situation and Stack Losses

E. S. Hinman interrogated Mr. Wagner as to the patent situation and was told that full protection had been afforded by the patent office in the United States and foreign countries. He regretted a certain licentious disposition on the part of some mill owners in regard to patent rights, as infringements of his patent had been reported. In reply to a question by Doctor Cable regarding losses of soda through volatilization and escape by way of the stack, Mr. Wagner said this amounted to 2 to 3 per cent in sulphate recovery. The loss in soda recovery had been high in one or two instances owing to faulty scrubbing, but since the adoption of a bag filter almost perfect in its operation there had been no loss to speak of, the bag filter being capable of recovering 99½ per cent of dust.

In regard to the concentration of liquor going to the recovery furnace, Mr. Wagner said that for sulphate 35 to 37 deg. Be. was about right and 34 to 36 for soda, though liquors as low as 25 to 28 deg. Be. worked satisfactorily.

The last paper at the forenoon sitting on Wednesday was one by R. R. Baker, of the Westinghouse Electrical and Manufacturing Company.

Control Equipment for Sectional Paper Machine Drives

In his description of "A New Speed Regulator for Paper Machine Drives", Mr. Baker explained the three types of sectional drives used on paper machines and enumerated the characteristics of a speed regulator under five headings. He said that the regulator should be capable of adjusting the motor field excitation to the exact value demanded by operating speed and load of motor. The regulator should be extremely rapid in its response to a demand for a change in excitation. It should be provided with means for differentiating between suddenly applied and slowly applied loads. As the regulator operates on the principle of a speed differential it should be free from backlash or lost motion. Finally, the regulator should be rugged in construction and have as few wearing parts as is consistent with effective design.

The foregoing features and requirements, Mr. Baker said, have been provided in the speed regulator for sectional paper machine drives developed by the Westinghouse Electric & Manufacturing Company.

A detailed explanation of the equipment and operation of control was given. In summing up its advantages Mr. Baker said these consisted of the ability of the regulator to make quick response to any changes without shunting or instability and the freedom of the apparatus from maintenance or attention of any kind.

The Banquet on Wednesday Evening

Mention has been made elsewhere of the dinner on Tuesday evening at which the Mayor of Richmond extended the greetings of the city and delivered an eloquent oration dealing with the part played by Richmond and the State of Virginia in the nation's development. James F. Ryland, vice president of the Standard Paper Manufacturing Company acted as toastmaster at this dinner as well as at the banquet on Wednesday evening when Major Leroy Hodges, managing director of the State Chamber of Commerce, was the principal speaker and dealt with the industrial progress of Virginia. Major Hodges said that Virginia not only leads all southern States by a wide margin, but that its paper industry is expanding at a ratio nearly twice that of the country as a whole. He asserted that the State of Virginia had more than forty different groups of manufacturers, each with an annual value of products ranging from $2,000,000 to between $175,000,000 and $200,000,000 for the largest industry of the State, tobacco.

Entertainment and Award of Prizes

The banquet was a most enjoyable one, as besides the speechmaking and award of prizes to the winners of the golf tournament there was a musical entertainment and the singing of negro spirituals by a church choir of colored singers. It was announced that Horace Keesey, secretary of the Schmidt & Ault Paper Company had been awarded the shield trophy presented by the D. J. Murray Manufacturing Company, Wausau, Wis., for the member of T.A.P.P.I. who made the low gross score. E. R. Neblett, of the Standard Paper Manufacturing Company, won the low net score prize, while C. E. Curran, of the Forest Products Laboratory won the blind bogey.

One of the delightful functions at the banquet was the presentation to Vice president Krimmel and Mrs. Krimmel by Major Hodges of two of the famed Virginia fairy or lucky stones which are believed to protect the wearer against witchcraft, sickness, accidents and disasters of all kinds. The stone presented to Mrs. Krimmel took the form of a small cross framed in gold. Major Hodges narrated a pretty legend concerning the origin of these little lucky stones which are found in Patrick County, Va., which had something to do with the crystallization of the tears of fairies.

THURSDAY'S SITTING

The session started on Thursday morning with a symposium on paper standards, with B. W. Scribner, chief of the Paper Section of the Bureau of Standards, Washington, in the chair. Introductory to papers by M. B. Shaw and F. T. Carson on "Papermaking Research" and "Paper Standards" respectively, Mr. Scribner gave a somewhat lengthy but interesting account of the equipment and work of the Paper Section as well as the functions and organization of the National Bureau of Standards as a whole. The bureau is organized into groups of divisions, one of which deals with research and testing and the other with commercial standardization. The groups are further subdivided into divisions, the names of which indicate their activities. A further subdivision of the divisions provides sections, as for example, the fibrous and organic materials division, made up of four sections dealing with rubber, textiles, leather and paper. There are eighty-five sections in all.

In addition to the facilities possessed by the Bureau of Standards for laboratory studies, it maintains a number of semi-commercial manufacturing plants, which enables it to make in an experimental way, paper, textiles, ceramic products, metal castings, etc. The research associate plan of the bureau permits industrial organizations to place men in the bureau to assist in the study of problems of particular interest to a given industry. The last annual report of the bureau lists eighty-seven research associates, with forty-eight supporting organizations.

The Paper Section

Speaking of The Paper Section as a testing laboratory for the government, Mr. Scribner said that some 2,000 paper samples were tested annually. Considerable government research is also done in addition to the study of industrial paper problems. Mention was made of work done on paper standards, including studies of optical, microscopical, physical and chemical testing. It was noted that the bureau's services in checking the accuracy of paper tests made in industrial laboratories was in large demand.

A review was given of the work of the Paper Section on the standardization of paper and research on permanence of paper as well as paper manufacturing processes and the study of new fibrous raw materials.

The improvement of the quality of the United States paper currency was referred to as an achievement of the Paper Section.

American Papermaking Clays

In the paper by Olin W. Callighan, of Edgar Brothers Company, the characteristics of domestic clays now used as fillers in the loading of paper and for coating were completely described. Edgar Brothers Company began to produce papermaking clay at McIntyre, Georgia, in 1910, and "H. T." coating clay and "Super Klondyke", brand names of Edgar Brothers Company's products, originate there. From actual boring tests it is estimated that enough clay is available from that region to last seventy-five to a hundred years, even if the present annual capacity of 150,00 tons be taxed to the limit.

Mr. Callighan touched on the prejudices of the papermaker in regard to the quality of American as compared with English clay. It took some time to convince users that American clays were being produced of lower grit content, lower moisture and greater uniformity than clays obtainable elsewhere.

Details were given of the methods of adding clay to the furnish in the beater. It is the general opinion that clay added to the beaters in slip form is most economical and offers advantages over bulk clay supplied in bags. In using slip clay the thinner the clay slip is and the longer it can be agitated, the better it will be. One ton of clay to a ton of water in a tank gives a pound per gallon slip. It was advised never to use a slip of more than two pounds to the gallon. Hot water slacks the clay more readily than cold water and should be used in making up the slip.

The advantages of domestic filler clay over imported clay was stated to consist of increased retention, greater opacity in the finished sheet and a higher finish. Other advantages were enumerated, one of the important recommendations being that domestic clay contains less grit than other clays, averaging around one-tenth of one per cent.

Some definitions and tests were given of great interest to the student of clay characteristics and valuable as reference material in paper mill laboratories.

In view of the prejudices in favor of English clays, Mr. Callighan said it was necessary to give specific instructions concerning the procedure to be employed in making and applying the coating mixture. The use of sodium silicate in the proportion of 0.5 per cent as a dispersive agent was recommended at the time of adding the water.

The following procedure and formula were recommended for general use:

In making a regular lithographic clay coating, the formula provides for 2,000 lb. of clay, 2,500 lb. water, and 10 lb. sodium silicate. After this mixture is made and kept agitated for a period of time varying from three-quarters to three hours 15 per cent of casein is added which has been previously cut with the necessary alkalies, sodium carbonate (soda ash) and ammonia in combination being preferred. Where considerable satin white is used, a combination of soda ash and trisodium phosphate gives a free flowing solution. It is noticeable that casein when cut with these alkalies requires less antifroth oil to eliminate pinholes.

In reiterating the advantages offered to the paper coater using domestic clays, Mr. Callighan enumerated the following points: (1) Greater covering power, resulting in greater color efficiency; (2) higher finish; (3) greater opacity, purity and uniformity of texture.

Simple Settling Test for Coating Clays—A simple settling test for coating clays was given, as follows:

Into a graduated cylinder is measured 100 cc. of water, to which 5 grams of the clay to be tested is added. This is agitated thoroughly a definite number of times and allowed to stand, the number of cc. settling in thirty and sixty minute periods being recorded.

Under average conditions 40 to 42 cc. for 30 minutes and 42 to 44 cc. for 60 minutes give a clay that is free-flowing and spreads well on the paper if the proper mix with casein is made.

Symposium on Waste

Following the presentation of papers by associates of Mr. Scribner in the Paper Section of the Bureau of Standards, one of which, that by Mr. Shaw, was illustrated with lantern-slide views of the papermaking department over which G. W. Bicking presides, Allen Abrams, of the Marathon Paper Mills Company, took the chair to conduct a "Symposium of Shrinkage", but before calling for the two papers dealing specifically with this subject he introduced O. W. Callighan, who was down on the program for a discussion of "Recent Developments in Domestic Clays for Coating and Loading". In view of the loss of clay experienced in the various operations of papermaking, the inclusion of the paper in a shrinkage symposium was more appropriate than it appeared to be at first glance.

Discussion of Clay Technology

Mr. Callighan made an excellent impression and many in the audience were surprised and gratified to learn of the progress that had been made in the production of clays of domestic origin so well adapted for the finer kinds of paper coating, though testimony was given by others connected with large paper manufacturing concerns like the New York & Pennsylvania Company of the exclusive use of American clays in their operations. Mr. Callighan was thanked by the chairman for his contribution.

Technic of Adding Clay—In response to queries concerning whether it was best to add the clay to the maximum amount of water at once or to begin with a minimum quantity of water; that is, to make up either a heavy slip and thin it down, or vice versa, Mr. Callighan said it was immaterial. The usual procedure and one which he recommended was the addition of 1 ton of water to 1 ton of clay and to use 1 lb. of this mixture to every gallon of water.

The next paper presented, entitled "Shrinkage Reduction", by D. K. Pattillo, was read in his absence by R. H. Dines, of the National Aluminate Corporation.

Classifications of "Shrinkage"

In the paper by Mr. Pattillo, who is director of the pulp and paper department of the National Aluminate Corporation, Chicago, it was tentatively proposed to give a definition and terminology of the term "shrinkage" which has recently come into use in the paper industry. Three shrinkage classifications were offered—namely, Invisible Shrinkage, Visible Cellulose Shrinkage and Chemical Shrinkage.

Invisible shrinkage was described as process loss through the decomposition of cellulose by bacteria. While invisible shrinkage may start at the raw water source it may also have its inception in raw materials contaminated with certain micro-organisms.

The development of slime in paper mill operations can be traced either to algae (vegetable growths), or to bacterial infection of raw materials, though bacteria may also exist in the water supply. Slime from algae does not destroy cellulose, but it is a good breeding place for bacteria and bacterial slime does destroy cellulose, the bacteria living on it.

The prevention and elimination of slime by the application of chlorine, especially by the use of a process in which the National Aluminate Corporation is interested, formed the burden of Mr. Pattillo's paper. Economies in papermaking operations through the elimination of slime formation and its prevention by the application of the Lychlor process were set forth.

Speaking of visible cellulose shrinkage, which is concerned with fiber losses in whitewater, Mr. Pattillo said that save-alls

of different types had been used to solve the problem from the mechanical end, but this had its limitations, in that a great part of whitewater loss consisted of short fibers. The problem was to change the nature and size of these short fibers to permit of their mechanical recovery and subsequent combination with the balance of the furnish to form the paper web. This introduced what he termed the chlorination-coagulation process, or the treatment of a pre-chlorinated whitewater with a suitable coagulating material. It was mentioned that different types of rapid coagulants had been developed for the pulp and paper field and were in commercial use, the type of coagulant varying with the type of product made. Chlorinated copperas was said to be effective in the treatment of soda pulps and for strawboard. It neutralizes excess alkali, eliminates products of decomposition and effects savings in cooking and washing.

Combinations of chlorine and alum were named as types of coagulants, chlorine and sodium aluminate being referred to as a rapid coagulant that produces a tough floc. Chlorine, alum and sodium aluminate in combination could also be applied, and he said the use of Boothal, an alum-soda-ash mixture, in conjunction with pre-chlorination had shown excellent results in some whitewaters.

Mr. Pattillo described chemical shrinkage as losses of loading, filling, sizing, etc. The greater part of these losses were avoidable by applying chlorination-coagulation to process water, as by this means retention was increased and "shrinkage" decreased. In a reference to the Buffer process of sizing it was averred that through chlorination of the process all danger of pH fluctuation was obviated, thus permitting the efficient operation of the Buffer process under fairly constant conditions.

In closing, Mr. Pattillo said that the best way to overcome losses through shrinkage was to make a thorough analysis of existing conditions and arrive at an understanding of the methods of treatment of the three types of shrinkages. Each mill offers a special problem, water, stock and flow conditions not being identical in any one mill.

Visible and Invisible Slime

The paper was discussed by L. M. Booth, Linn Bradley and M. A. Krimmel. Mr. Booth said that visible slime was only one evidence of possible loss from shrinkage and the end to be sought was the adoption of a closed system of manufacture where there would not be any white water losses. Mr. Krimmel was of the opinion that slime had its origin in organic matter or microorganisms present in the water and there ensued a discussion on the chlorine and other disinfectants necessary to prevent the growth of such microorganisms. Chlorine was said to be effective in the proportion of 100 lb. to 500,000 gallons, and copper sulphate solution of the strength of 1/10 oz. to 1,000 gallons was generally used successfully.

Following this came the paper by A. T. Taylor on "Shrinkage". Mr. Taylor is connected with the Bedford Pulp and Paper Company at Big Island, Virginia and he discussed the subject from the mill angle.

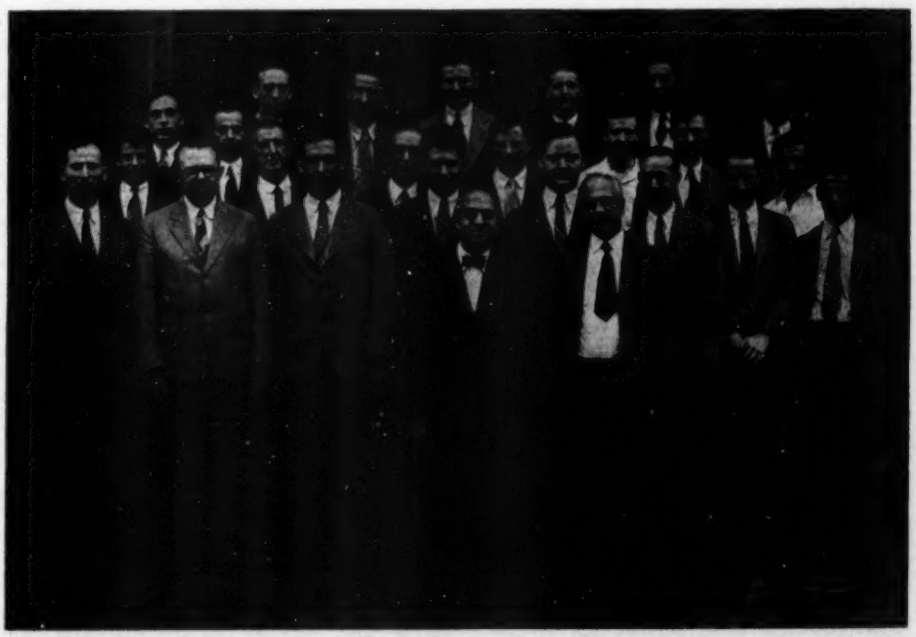
Shrinkage Losses in Papermaking

In describing the factors of waste in paper manufacturing which are included under the designation of Shrinkage, Mr. Taylor showed how to keep a check on whitewater losses and locate leaks. Accurate cost accounting is essential in any program of waste reduction. He instanced groundwood charged at 31 per cent dry which on test proved to be only 30 per cent dry. Tests of laps furnished to the beater on the basis of 10 lb. air dry showed a variation ranging from 9 to 11 lb., with an average of about 10¼ lb. per lap. By correcting the amount of groundwood charged to the mill and weighing the pulp into the beaters, the shrinkage was reduced nearly 25 tons a month. Savings were effected by reducing the amount of water used on the showers of the fourdrinier and the use of save-alls decreased shrinkage from all sources by approximately one-third. Invisible shrinkage was detected by placing weirs in the sewer lines and taking samples of the effluent for testing.

A survey of the mill was recommended to determine the equipment best adapted for recovery of fiber ordinarily run into the river. The technical man can render a real service to his employer by spotting leaks and reducing waste.

What is Shrinkage?

There appears to be a need for an accurate definition of the term shrinkage and Mr. Abrams voiced this need. He said that cost accountants were in the habit of charging certain losses which the average superintendent of a mill was apt to characterize as "book figures" and not actual figures. George K. Spence did not altogether agree with this and expressed amazement that there should be any confusion in the minds of the members as to what constituted shrinkage. He said that the average unaccounted shrinkage in the mills



Photograph of the members of the technical laboratory of the Division of Tests and Technical Control of the Government Printing Office, Washington, D.C. The names and titles of the men in the picture are as follows:

First Row—*Edward O. Reed, Technical Director; Hon. George H. Carter, Public Printer.* Second Row—*M. S. Kastrowitz, chemist; B. L. Wehmhoff, ass't technical director; F. R. Blaylock, research associate, Employing Bookbinders of America; D. H. Boyce, research associate, American Newspaper Publishers Ass'n.; R. H. Simmons, chemist; D. P. Clark, chemist; E. A. Graves, chemist; L. B. Tucker, chemist.* Third Row—*E. S. Gruver, chemist aid; R. J. Bell, in charge, Metal Section; J. B. M. Dulin, in charge, Ink Section; J. L. Athins, chemist aid; J. R. Rohrback. Postal Card Paper Inspector; M. M. Wertz, clerk.* Fourth Row—*W. H. Stewart, chemist aid; L. J. Jenkins. chemist aid; D. B. Hanley, chemist aid; G. G. Groome, chemist aid; L. Price, chemist aid; E. J. Zeminski, clerk; J. N. Paisley, clerk; W. R. Mills, laborer*

of the New York and Pennsylvania Company amounted to 1½ or 2 per cent.

After thanking Mr. Taylor for his informing paper, Mr. Abrams declared the sitting adjourned.

A Fruitful Convention

This year's fall convention of the Technical Association of the Pulp and Paper Industry afforded the members opportunities for visiting a number of diverse pulp and paper plants. In the Richmond district the mills of the Standard Paper Manufacturing Company, Albemarle Paper Manufacturing Company and Manchester Board and Paper Company were visited, and side trips were made by a goodly proportion of the members to the plants of the Hummel-Ross Fibre Corporation, Hopewell, and Chesapeake Corporation, West Point, Va. Three sightseeing busses and a number of private motor cars conveyed a large party to Hopewell, where they were conducted over the plant of the Hummel-Ross Fibre Corporation, by F. Norman Beveridge, general superintendent, who was assisted by several of the technical staff of the board mill and sulphate pulp mill. The return to Richmond was made in time for the banquet on Wednesday evening. At West Point on Thursday a small party was received and shown over the plant of the Chesapeake Corporation by Ellis Olsson, vice president and general manager. This is the plant which was described so fully in THE PAPER INDUSTRY for November, 1927, p. 1323.

Things Seen in Washington

A large number of the members went from Richmond to Washington by train, bus and automobile on Thursday afternoon, coming together in the evening at the Wardman Park Hotel, the attractions of which are noted in the introductory paragraphs of this story of the meeting.

An early start was made after breakfast on Friday for the mills of the District of Columbia Paper Manufacturing Company where specialty papers are made from pulp. The wood is grown locally, some of it being purchased from nearby farmers when not obtained direct from the timber limits of the company. Cotton linters is used for half stock by a special process. To the great regret of all who enjoy the privilege of knowing D. A. Smith, vice president and general manager of the company, he was unavoidably absent in attendance on Mrs. Smith who was undergoing treatment at the Johns Hopkins Hospital, Baltimore. H. R. Harrigan, J. M. Krauss and A. D. White divided the work of entertaining the visitors. Leaving the mills in busses provided by the company, the visitors were taken to the Bureau of Standards where a special demonstration of the use of its papermaking apparatus was given and all of the instruments used in chemical, microscopical and optical examinations of paper were on display. Every piece of machinery and testing apparatus was appropriately labeled by means of legible display cards and members of the technical staff were on hand to demonstrate the use of the instrument upon request.

A Visit to the Government Printing Office

From the Bureau of Standards, the party, numbering nearly 100, was taken to the Government Printing Office at the other end of Washington near the Union Station, where they were met by the Hon. George H. Carter, public printer, and E. O. Reed, chief technical director. The party was taken to the cafeteria on the eighth floor after assembling on the second floor where the offices of the Public Printer, chief clerk, and purchasing agent are located. There was no delay in serving luncheon in the cafeteria. Every visitor was furnished with a tray containing knives, forks and spoons and selected his lunch as he went along from one end of a hot table to the other. Although 3,000 persons had just been served with meals, the cafeteria was equal to the additional demands of the Technical Association visitors and everyone got a meal to his own liking at a nominal cost. The cafeteria is self supporting but no profit is made on its operation, and, as may be inferred, it is a popular institution. Once a week on Fridays during the lunch period, day and night orchestras composed of employees give concerts. The cafeteria is owned and directed by the employees, through a mutual benefit association.

The visitors were taken under the direction of guides to every part of the building. Naturally the testing section with its well equipped laboratory for the purpose of analyzing paper and all other material purchased by the Government Printing Office attracted most attention. Each visitor was presented with a copy of a four-page publication called "Facts and Figures" which gave a mass of information concerning the equipment, production and government of the various departments of the Government Printing Office. In addition to the cafeteria which was established in 1922 by Mr. Carter, a very complete emergency hospital is maintained, with a staff of two physicians and three nurses.

Sulphate and Soda Recovery Methods[1]

By C. L. WAGNER
J. O. Ross Engineering Corporation, New York

AMONG the outstanding pulp mill developments of the last decade, the Wagner recovery furnace occupies a prominent place. After six years of work it has now been commercially perfected and made available to all, rather than to one group only.

The development, which was mainly carried out on a commercial scale, was necessarily slow and expensive and required a considerable faith and willingness to spend money for research and development. With the co-operation and backing of the J. O. Ross Engineering Corporation, sole licensees, we are at last at the point where results can be accurately predicted.

The field of this work was wholly unknown and the chemical engineering problems encountered and solved, covering every item entering into construction and operation, were very numerous.

Waste Avoided

As an instance of a complex problem, we take that of removing the chemical carried out during combustion. While under proper operation, this is a very small proportion of the total, under improper conditions, it might be so serious as to make the process uneconomical. The gases leave the furnace at from 1900 to 2300 deg. Fahr., carrying with them a certain amount of chemical as smoke—that is, the particles of chemicals have colloidal dimensions. In order to collect these suspended solids the gases must be cooled, thereby requiring a boiler of special design, the primary function of which is to cool the gases and collect such chemicals as are present. Steam in every case must be a secondary consideration to chemical function and still the utmost amount of it must be secured from the boiler to assure the economy of the recovery.

We have had very valuable co-operation from the boiler companies and now have extended a waterwall roof to cover the furnace, this being an integral part of both boiler and furnace. When the gases leave the boiler at 450 to 500 deg. Fahr., the heavier particles have already been deposited, and centrifugal force, as utilized in the cyclone device, will no longer operate within the limits of a practical apparatus.

It has also been apparent that the dust cloud possessed an electric charge, fortunately, a negative one, so that the charge must be neutralized before the particles can even be wetted.

Factors in the Operation

Our solution of the problem involves a combination of several factors; namely, centrifugal force, countercurrent sprays having a positive electric charge, and wet contact surface for the gas-water suspension removal of chemical already in solution. That this is effective has been proved beyond any doubt and total furnace recoveries of 97 to 98 per cent are obtained, part of the loss being undetermined.

We have a further development, where perfectly clear gases can be liberated, this being to cool the gases to 180 to 220 deg. Fahr. by means of a specially designed water heating economizer and then passing them through a mechanically operated bag filter, whereby no visible chemicals leave the stack. If water at 160 deg. Fahr. can be used, the thermal

[1]Presented at fall meeting of T.A.P.P.I., Richmond, Va., September 25, 1929.

efficiency of the unit is up to or higher than that of modern boiler units.

Absence of Corrosion and Erosion

Corrosion has been eliminated as a vital factor in sulphate pulp manufacture, since with our system, sulphur dioxide liberation is so small as to be negligible. In the scrubber, very weak green or white liquor can be used to overcome acidity, but our principal sulphur loss is as carbon oxysulphide. Erosion of linings and boiler walls is no longer serious. Temperatures and gas velocities are so regulated by the arrangement, that no localizing action can take place.

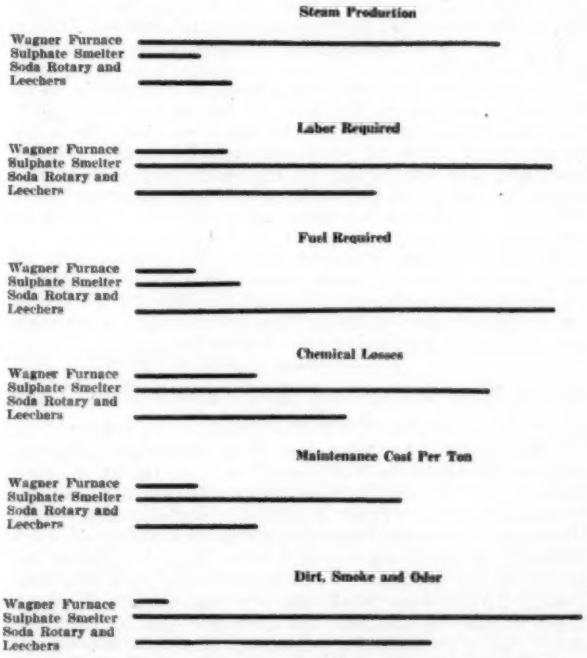
Equipment is practically standardized and while location and setting may vary considerably, with proper density of liquors, kinds of woods or raw materials make very little difference in operation. The only difference between the soda and sulphate furnace is the arrangement of the bottom or hearth and introduction of primary air nozzles. Secondary air supply in both cases is similar.

Evil Smell Abolished

One of the benefits to the sulphate pulp industry, which cannot be measured by its money value, is the elimination of odors, notably mercaptans and sulphide gases. These odors, which are offensive at long distances, originate in digesters, evaporators, smelter rotaries and disk evaporators and in minor amounts from liquor storage tanks.

All of these gases, practically non-condensible, are collected and introduced to the secondary combustion zone of the Wagner furnace and easily destroyed. The collection of gases is not difficult or expensive and makes it possible to have a sulphate mill without offensive odors, thus eliminating the probability of lawsuits and complaints.

What the actual money benefits and the improvement in working conditions are, can be easily ascertained. Under average mill conditions with the old recovery systems and the new, the results can be represented by lines, as follows:



Our confidence in this development is considerably strengthened by a repeat order of large dimensions, where our furnaces have been in use long enough so that actual figures are available on all phases.

As a general rule the actual savings over the old systems will wipe out the total initial investment within two years. This includes boiler cost, which is really chargeable to power account.

In other words, a constant source of expense in recovering chemical has been converted to a profit-paying operation.

Cost Association Meets

Accountants Discuss Production Methods and Cost Systems at Semi-annual Conference

PROBLEMS directly affecting the cost department of the papermaking industry were the theme of addresses by prominent men in the industry and the subject of interesting discussions at the twenty-third semi-annual convention of the Cost Association of the Paper Industry, held in Wausau, Wisconsin, September 19, 20 and 21. About sixty members of the association attended the gathering.

Standardization of Depreciation Rates

Frank W. Jackson, American Appraisal Company, Milwaukee, Wis., made an address at the opening session of the convention on the subject "Should Depreciation Rates be Standardized in the Pulp and Paper Industry?" Mr. Jackson stated that while late developments in the machinery used affects the production of paper, the various mills should inaugurate a system whereby the cost of production of the old machine should be decreased in accordance with the developments which tend to show lower costs.

Bonus System Should Increase Production

Increased business and lower costs would result in the installation of bonus systems in the offices and shops of the paper mills, J. P. Hagenauer, Chicago, industrial engineer, said at the afternoon session of the first day's meeting. Mr. Hagenauer stated that a bonus system was one of the outstanding features of a mill that had to do with the increased production and lower cost and urged members of the association to create a demand for the installation of such a system in their respective mills. Mr. Hagenauer, whose subject was "The Setting of Standards in the Paper Industry", is with L. V. Estes, Inc., Chicago. Charles Passmore, Chicago, an accountant with Frazer and Torbet, gave an interesting talk on "Use of Standards in the Paper Mill Accounting."

Modern Accounting Methods

The cost of production of paper would be greatly reduced by the use of modern methods of accounting and also of materials in the water and wood rooms, digester and other departments of the mill, G. F. Enderlein, chief chemist of the Mosinee Paper Mills Company, Mosinee, Wisconsin, said in his paper on "Technical Control in the Paper Mill." The decrease, he said, would result to a large amount by checking closely in every department. The raw wood, he advocated, should be checked once or twice a week to ascertain the amount of shrinkage whereby the actual cost of the raw material and the finished product could be more easily determined.

The Value of Proper Financing

Competition in the papermaking industry has created a need for refinancing the mills in order to keep to the front and there are a number of instances where paper mills have failed recently because of the lack of proper financing, Newton V. Wagner, Chicago accountant, told the members of the association. Mr. Wagner urged the cost men to strive to rearrange the finances of their respective companies, if they had not already done so, to meet any emergency that might arise so that the progress of the individual mill would not be impaired for the lack of financial backing. Occasionally a paper mill is forced out of business because of the need of temporary financial help and this, in most cases, could have been avoided had the organization taken the proper measures to insure its financial rating prior to its downfall. Mr. Wagner's subject was "Financing the Pulp and Paper Mills."

Maintaining Standards

C. R. Whipple of the Beloit Iron Works spoke on the subject "Rated Machine Capacities and How They are Compiled." He stated that machine manufacturers of today realize the importance of living up to the standards and representations they have set concerning their products and that they are working ceaselessly to do everything possible to maintain their claims and to assist in every possible way to increase production in the paper mills. By building new and better machinery the manufacturer does his part in creating better business and at lower cost to the papermaker, he asserted. If the machine manufacturer did not progress, the paper industry would suffer.

Mills Urged to Grow Trees

Paper manufacturers were urged to grow their own supplies of pulpwood in a paper read at the convention which was sent by Charles W. Boyce of New York, secretary of the American Pulp and Paper Manufacturers association, who was not able to be present for his scheduled talk. Mr. Boyce stated in his paper that the supply of pulpwood throughout the country would be nearly exhausted within thirty years and that even at this time mills are paying large amounts for pulpwood that seem to be more than necessary and which would be more uniform if there was a concentrated effort to grow pulpwood trees on large scales. His paper, "Pulp Wood Costs as Affected by Regional Competition", stated that mills should augment the natural crops of pulpwood and if they fail to do this some mills would find it difficult to continue to meet the competition.

Co-operation of Sales and Cost Departments

Closer co-operation between the accountants and the sales departments of the various mills is a necessity, James L. Palmer, assistant professor of marketing in the University of Chicago's school of commerce and administration, said in his talk on "Accounting for Selling and Distribution Expenses." The sales manager of the paper mill is of the aggressive type and not inclined to research or statistics while the accountants are just the opposite, the speaker told the cost men in urging them to work more closely with the salesmen. By these two departments of the mill, especially the individuals, working in closer harmony better results for the mills and for themselves would be the natural result, Professor Palmer brought out in his address. The delegates to the convention were urged to be more statistically-minded as facts and figures made good subjects for intensive study on the part of all office men, especially those in the cost department.

Prophets and Profits

Thomas J. Burke of New York, secretary and treasurer of the association, who presided over most of the convention meetings in the absence of the president, gave an interesting talk on "Prophets and Profits" at the Friday session of the convention. Individuals working in the various departments of the paper mill must be trained in every department of the mill and industry if they are to get the best results from their labors and also if they are to make the most of any information they receive concerning markets for mill products, Secretary Burke said. It would appear, the secretary declared, that there are a number of paper manufacturers who believe that to succeed they must produce as much pulp and paper as possible with little or no regard for the market for their products. Situations such as these are harmful to the industry as well as to the respective mills and the organization of men working for it, it was said.

Dinner Meeting

A. M. Van Douser, Wausau, auditor for the Marathon Paper Mills company of Rothschild, who was general chairman for the convention, presided at the annual dinner held by the association the evening of September 19. Fred C. Boyce, Wausau, first president of the American Pulp and Paper Mill Superintendents' Association, was called upon for a brief talk following the dinner. He said there should be a closer co-operation between mill accountants and superintendents which would result in efficiency and decreased costs. James A. Reilly of Holyoke, Mass., gave a response to Mr. Boyce's address in which he recalled many instances of the early days in papermaking in which Mr. Boyce figured. Mr. Reilly is a former president of the cost association. Dancing followed the dinner and talks.

Members Visit Mills

One of the afternoons of the convention was devoted to visits to the several paper mills in this section, most of them going through the mills at Rothschild, Brokaw and Mosinee, near here. A golf tournament was held in which a number of delegates participated. Special programs were held for the visiting ladies. Chairman Van Douser was assisted on the arrangements committee by Miss Irene M. Carney of Tomahawk, Harry Deyo of Nekoosa and Frank Shemanski of Stevens Point, Wisconsin.

Election of Officers Deferred

Two Massachusetts men, Ralph B. Hersey of Boston and Henry R. Boston of North Hoosick, were nominated for the presidency but because of the small number of delegates remaining for the final session of the convention election was to be by mail. Secretary Burke was instructed to forward the names of the nominees to each member of the association. No vote was taken for secretary and treasurer and it was taken for granted that Mr. Burke hold over in his office for another year.

New Uses for Kraft Paper

Vice President Rantoul of the New York Division of the Salesmen's Association of the Paper Industry spoke at the weekly luncheon meeting on September 23, discussing problems in the development of new uses for kraft paper and especially those encountered in the introduction of mulch paper by the International Paper Company.

Mr. Rantoul said that from time to time the New York Division had heard speakers on various phases of merchandising who presented many new ideas, some of which seemed radical. Many of these ideas had been tested and proved in other lines of business, but because of long established customs in the distribution of paper, it had not yet been deemed practicable to adapt many of these ideas to our own industry, no matter how successful they had proved in other lines.

The first real opportunity to try out some of the new precepts of modern merchandising had been presented, he said, in introducing mulch paper. This in spite of the fact that various circumstances combined to force the company into the marketing of the product before they were fully prepared, so that provision had to be made for direct sales to consumers during the first year, the time being too short in which to build up a complete system of wholesale distribution. After surveying the field, the International Paper Company reached the decision that the distribution of mulch paper should be made through paper merchants and dealers rather than through wholesale hardware firms, seed firms or other channels.

One particularly interesting phase of the mulch paper business, according to Mr. Rantoul, lay in the fact that it was one of the relatively few instances in which the paper manufacturer could advertise successfully to the ultimate consumer. The success of his company's advertising campaign for this paper indicated to him that wherever direct consumer advertising for paper were possible, it would be profitable.

Mr. Rantoul also discussed briefly the large variety of possible new uses for kraft paper which were brought to his attention from time to time, and the difficulty of making the great majority of these ideas commercially practicable for large scale production and distribution.

Penna.-New Jersey and Southeastern Superintendents to Meet

A joint meeting has been planned for Friday and Saturday, October 18 and 19, in Washington, D. C. of the Penna.-New Jersey division and of the Southeastern division of the American Pulp and Paper Mill Superintendents Association. Headquarters for the meeting will be the Wardman Park Hotel, which has named special rates for the members and guests of the division. Registration will begin Thursday evening and continue on Friday morning until 9:30 o'clock.

An interesting program has been provided by the Committee of Arrangements, consisting of E. C. Gildenzopf, Congoleum-Nairn, Inc.; W. H. Brydges, Bedford Pulp & Paper Company; B. K. Steadman, Standard Paper Manufacturing Company; J. E. Blosser, Scott Paper Company, and J. B. White, National Vulcanized Fibre Company.

The officers and executive committee of the national association meet annually in September and it has been decided by them to foregather with the Southeastern division and the Penna.-New Jersey division at the joint meeting in Washington on October 18. A large attendance of members and guests, including ladies and supply men is expected.

Wisconsin Supers Meet With Engineers

News Print Service Bureau and Northwestern Division of Superintendents Association Hold Joint Two-Day Meeting in Marinette, Wisconsin

MANAGERS, engineers and operating executives of pulp and paper mills in the region of Wisconsin, Northern Michigan and Minnesota met in Marinette, Wisconsin, September 20 and 21, 1929, to discuss subjects on which mills are now spending large sums of money to reduce costs and improve their products. The occasion was a joint meeting of the News Print Service Bureau and the regular fall meeting of the Northwestern Division of the American Pulp and Paper Mill Superintendents Association, held under the auspices of the Marinette & Menominee Paper Company, Marinette, the Falls Manufacturing Company, Oconto Falls, Badger Paper Mills, Inc., Peshtigo, and the Victory Bag & Paper Company, Marinette, Wis. Such an arrangement was designed for the purpose of bringing out more than the customary attendance of mill executives and in this and all other respects, the meeting was a grand success.

Entertainment features consisted of visits to mills in Marinette, Menominee and the Escanaba Paper Co., Escanaba, Mich., luncheons at the Riverside Country Club in Menominee, stag dinner and banquet at the new Hotel Marinette, golf, exhibition drill of the Teddy Budlong Post No. 39, American Legion Drum and Bugle Corps, and a most delightful program for the entertainment of the ladies. Great credit is due to the advisory committee, consisting of W. W. Hinnenthal, manager, Marinette & Menominee Paper Co., and Frank Cota, manager, Falls Manufacturing Company, and the officers and local committee chairman, consisting of P. J. Sievert, chairman and A. B. Hansen, secretary-treasurer, Northwestern Division of Superintendents, M. C. Dickoff, C. L. Barnum and Mrs. A. B. Hansen. The latter had charge of the ladies' entertainment which consisted of a Bridge Tea at the Riverside Country Club and a luncheon at the Little River Golf Club, movies, sight seeing and yachting on the magnificent boat of the Limestone Products Co., and the joint banquet for the ladies and men on Saturday evening.

The meetings were held in the afternoons which permitted the mornings to be spent in visiting mills or in golf at the country club. The program of the first day's meeting was arranged by the News Print Service Bureau for cost accountants, engineers and mill executives. That of the second day was arranged by the Superintendents Association, and this constituted their fall meeting.

FRIDAY AFTERNOON MEETING

Following the registration at Hotel Marinette and luncheon at the Riverside Country Club, the first day's session was held in the Armory at Marinette, beginning at two o'clock, Edward P. Gleason, Nekoosa-Edwards Paper Co., presiding.

The program majored of two important principal subjects, each followed by the practical experiences on these matters in representative mills of the region. The two major subjects were—"Application of Higher Steam Pressure to Pulp and Paper Mills", and "Bonus Systems in Pulp and Paper Mills."

High Pressure Steam in the Paper Industry

J. B. Crane, engineer, Combustion Engineering Corporation, presented a valuable and most interesting paper on the subject of high pressure steam and its applications to the paper industry. In it he listed more than thirty American paper and pulp mills which had installed new units using 400 lb. or higher steam pressure. The highest pressure steam units yet used for any purpose in the United States will be two units at 1,800 lbs. for making roofing paper to be installed at Lockland, Ohio for the Phillip Carey Company. The latter installation represents the maximum amount of power per pound of by-product steam that has yet been attempted in this country.

Practical experiences with the use of high pressure steam in pulp and paper mills were then related by the following: W. F. Thiele, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.; G. H. Suhs, Rhinelander Paper Co., Rhinelander, Wis., and Leo F. Bunde, Nekoosa-Edwards Paper Co., Port Edwards, Wis. A general discussion on the subject followed including questions as to costs, strength of materials, caustic embrittlement, etc., and the general understanding obtained from those of experience was that high pressure plants quickly pay for themselves.

Bonus Systems

An excellent presentation of the subject of bonus systems and the setting of standards in pulp and paper mills was made by J. P. Hagenauer, of L. V. Estes, Inc., Chicago. Operation and time studies are the initial steps to be taken to lay a satisfactory foundation for a bonus system.

Each department of a paper mill must be analyzed to determine just what object is to be attained and the relative importance of quantity, quality and material saving decided upon.

Whatever the governing factor in any department may be, it is possible to determine a standard and to provide an incentive of mutual interest and benefit to all concerned. Mr. Hagenauer explained the outstanding features of the Premium Wage Plan which is considered to be the most just for both management and labor.

Practical and successful experiences in the use of bonus systems were then related by Fred Deutsch of Marathon Paper Mills and J. K. Vanetta, of Nekoosa-Edwards Paper Co., which were followed by many questions and remarks on the application of the plan in all departments of a paper and pulp mill.

This concluded the day's program and the session was adjourned.

Stag Dinner

Dinner was served at 6:30 p. m. in the dining room of the new Hotel Marinette. A jovial spirit pervaded throughout the evening under the genial wand of Toastmaster Joseph H. Slater, manager, Escanaba Paper Company. Community singing was led by A. B. Hansen, of the M. & M. Paper Co., and Ernest Bowman, employee of the Victory Bag Company, Marinette, rendered vocal selections.

Mr. Slater expressed the pleasure of the superintendents in holding their meeting in that section of the northwest region for the first time in its history, and hoped that they might at a later time come a little farther north to Escanaba, Michigan.

The Hon. Richard P. Murray, Mayor of Marinette, was introduced, and the number of good stories he told and his sincere and genuine welcome made every one feel happy.

G. A. Ware, of the News Print Service Bureau delivered an instructive talk in which he outlined the properties of control and its exercise which is accomplished by measuring to standards.

Attorney John J. O'Hara gave an eloquent address on the Constitution of the United States.

SATURDAY AFTERNOON SESSION

Following a luncheon at the Riverside Country Club, the meeting arranged by the Superintendents Association convened in the Armory at Marinette at two o'clock, Chairman P. J. Sievert presiding.

Seasoning of Wood

The order of the program was adhered to and Dr. C. Audrey Richards, of the Forest Products Laboratory, Madison, Wisconsin, was called upon to present her paper on seasoning of wood in relation to its decay.

After a brief description of the causes of decay of wood, the reminder was given that while partially rotted wood can be used economically in the manufacture of paper, enabling the pulp industry to obtain wood that can not be used for other things, much can be done to cut down the amount of such material. Changes in present practice must be based on a thorough knowledge of the causes of decay and the conditions which favor it. Improvements can not be effective without a certain outlay for adequate supervision, facilities and labor necessary to carry them out. Much of the storage loss is preventable by the introduction of better methods of piling and improved sanitation.

The method of controlling decay in wood in progress from forest to the wood yard was then described and recommendations made.

Dr. Richards was thanked for her splendid paper, and the next speaker on the program, A. B. Hansen, M. & M. Paper Co., was called upon to deliver his paper entitled "Hydrogen Ion Control and Causes for Deterioration of Paper."

pH Control in the Paper Mill

Mr. Hansen related that among the many factors other than the proportion of alum to size which influences the pH value, there may be listed the pH of water used in the beaters, kind and proportion of pulp used, waste liquor in the pulp, etc.

On any one grade of paper, the factors that affect the pH can often be controlled so that their composite effect is more or less constant. This is often the case when the various kinds of pulp are manufactured under careful control at the plant.

When some of these factors are not within control, such as would be the case when buying foreign pulp, it becomes necessary at times to make adjustments to compensate for variations in pH value. If the pulp has not been thoroughly washed, the pH value may be increased considerably in the case of kraft stock or decreased in the case of sulphite stock. Variations in strength of the pulp often require a corresponding change in the stock furnish to produce uniform paper. Such a change would again affect the pH value. When, therefore, the pH value of the white water, taken under the wire of the paper machine, is not within the desired limits, an increase or decrease of the concentration of alum is effected to obtain the proper pH value.

Mr. Hansen then described his determinations of effects of pH on sizing, color, rate of deterioration of paper, beating, and on the paper machine, concluding with the following statements:

(1) A definite ratio between size and alum should not be followed for different papers.
(2) The best pH for sizing may not be the same for different mills. It should be determined for each mill. It will probably lie between pH 4.0 and 6.5.
(3) Decreasing the pH value or increasing the hydrogen ion concentration increases the rate of deterioration of paper.
(4) In general, beating takes place more rapidly at higher pH values than at lower values.
(5) Decreasing pH values increases the corrosiveness of stock and white water on paper mill equipment.
(6) A "standard" pH value for each grade of paper should be set at each mill and followed closely.

A long and interesting discussion followed the reading of the paper.

Slime Control Problems

"Slime Prevention and Shrinkage Reduction" was the title of the next paper, prepared by D. K. Pattillo, of the National Aluminate Corporation, Chicago. Mr. Pattillo was unable to be present and his paper was read by Mr. A. F. Horton. In the report of the fall meeting of T.A.P.P.I. on another page in this issue will be found an abstract of another paper presented by Mr. Pattillo under the heading, "Classifications of Shrinkage", to which the reader is referred for the same facts that were contained in the paper presented at Marinette.

There was general discussion of the subject followed by the reading of the next paper, "The Measurement, Sampling and Analysis of White Water" by A. Pesch, of the Falls Manufacturing Co., Oconto Falls, Wisconsin.

Measurement and Analysis of White Water

Among the reasons given by Mr. Pesch why white water data is important to every mill were: (1) to help in improving efficiency of operators with the idea of reducing losses with present equipment; (2) to show whether equipment changes such as more efficient save-alls and white water circulation systems are advisable; (3) to indicate whether or not the paper mill is actually receiving the amount of pulp charged to it, and (4) to help solve the problem of stream pollution.

The evaluation of white water losses is therefore necessary, and it becomes worse than useless if it is not accurate. Methods of measurement, sampling, analysis and reporting results were then described.

Election of Officers

The nominating committee presented the following names of members of the Northwestern Division of the Superintendents Association for their election as officers for the ensuing year:

Chairman—P. C. Bradley, Fort Howard Paper Co., Green Bay, Wis.

First Vice-Chairman—J. R. Simpson, Consolidated Water Power and Paper Co., Wisconsin Rapids, Wisconsin.

Second Vice-Chairman—R. W. Haddock, Escanaba Paper Co., Escanaba, Michigan.

The report of the committee was accepted and the election unanimous. Past Chairman, Mr. Sievert expressed his appreciation of the support which had been given him during the past year.

Kraft Manufacturing Problems

The last paper on the program was an interesting, historical account by A. Gustin, of the Falls Manufacturing Co., of the erection in 1907 of an experimental plant at Oconto Falls to make kraft paper. While Mr. Olai Bache Wigg, at East Angus, Quebec was then making kraft, having converted the old soda mill that was there, Mr. Gustin reminded that the start made at Oconto Falls was the pioneer in the States, followed soon after by Mosinee, Thilmany, International Falls, Nekoosa, McDill, Tomahawk and Ontonagon.

Comparisons were cited by Mr. Gustin of the type of equipment in kraft mills then to what they are at the present day, and a brief description was given of modern equipment.

A Letter from an Old Friend and Papermaker

A letter was read from the chair by Mr. Sievert from William C. Nash, of Gilbert & Nash Co., Neenah, Wisconsin, formerly superintendent of the Lakeside Paper Company, and retired from active papermaking for the past seven years owing to poor hearing. Mr. Nash's letter was full of interesting information and experiences and was very warmly received. The meeting was then adjourned.

Joint Banquet

A joint banquet was held at 6:30 p. m. in the banquet room of Hotel Marinette, arranged by the M. & M. Paper Co. and Falls Manufacturing Co., Mr. W. W. Hinnenthal, general manager of the M. & M. Co. acting as toastmaster.

A charming music and entertainment program was rendered by The Cotterill Sisters, Iron Mountain, Michigan, and community singing as before was led by Mr. Hansen. A number of laughable dialect stories were told by Dan J. Madigan, of the real estate firm of Duxbury & Madigan.

Announcement of the winners of the ladies' bridge games was made, also the gentlemen winners in the golf tournament, and prizes presented by Northern Hardware & Supply Co., Limestone Products Co. and Michigan Electro-Chemical Co., all of Menominee, Michigan, were then awarded.

Following the introduction of the newly elected officers, attention was centered on a splendid address by P. F. Neverman, secretary-manager, Marinette Industrial Board, on the

promising future of the smaller cities and the growing tendency toward decentralization of industry.

The evening's entertainment terminated in a stirring exhibition on the public square by the Teddy Budlong Post No. 39, American Legion Drum and Bugle Corps, for which the Mayor had made special provision for the entertainment of the visitors. And thus was ended a memorable occasion.

Paperboard Industries Association

Members of the Paperboard Industries Association met at the Drake Hotel, Chicago, September 18 and 19, 1929. The Folding Box, Paperboard and Container Group Meetings were held on Wednesday, September 18, and the general meeting of all members of the three groups in joint session, was held Thursday afternoon, September 19.

Folding Box Group—This meeting was presided over by the group vice president, H. H. Stonebarger, of the Globe Folding Box Co., Cincinnati, Ohio. The principal business transacted at this session was the election of a nominating committee to nominate officers for election at the annual meeting of the association in November.

Paperboard Group—Vice president Strange of the John Strange Paper Co., Menasha, Wis., presided over this meeting, which was conceded to be the most interesting and constructive meeting of the Group since the formation of the Association. Vice president Strange submitted a comprehensive and constructive report in which he pointed out specific factors contributing to the welfare of the paperboard and related industries. The meeting was largely devoted to a discussion of the problems confronting the industry and how these problems may be most effectively solved. A nominating committee was also appointed to nominate officers for the annual election in November.

Container Group—H. C. Krannert, of the Inland Box Corporation, Indianapolis, Group vice president, reported briefly regarding the meeting of the executive committee, mentioning specifically items of particular interest to this group. The Container Group voted unanimously to extend a cordial invitation to the manufacturers of graft liner board (who are not now members) to become members of the Paperboard Industries Association. The view generally expressed by the container manufacturers was that the move looking toward co-operation with the kraft liner manufacturers is one which is in the right direction and which will unquestionably benefit every factor in the entire industry. A nominating committee was also appointed by this group.

General Session—The meeting of all groups was well attended and was presided over by John J. Brossard, of the Fort Wayne Corrugated Paper Co., president of the association. President Brossard submitted a comprehensive report covering subjects considered and action taken by the executive committee which met at Chicago, September 17. Included in this report were recommendations regarding calendar reform, also that of a special appropriation recommended for investigation regarding the use of paperboard products in connection with the packaging and shipment of specific products.

The annual meeting of the association will be held at the Commodore Hotel, New York City, November 20, 21, 1929.

Trade Practice Administration—Committees from the three groups of the Paperboard Industries and members of the board of directors of the Trade Practice Administration met at the Drake Hotel, Chicago, September 17. The recommendations of the board were duly presented to a meeting of the Trade Practice Administration held at Chicago, September 19. J. P. Brunt, chairman, presiding.

Announcement was made that in accordance with the desire of the manufacturers located on the Pacific Coast, Hugh Peat, general secretary, Pacific Coast Paper Box Manufacturers Association, San Francisco, had been delegated to act as the representative of the Pacific Coast manufacturers in administering the Trade Practice rules in that territory.

The acceptance of Trade Practice rules was taken up and a list of companies which have accepted the rules was read. The report of the board of directors was submitted by Chairman Brunt and approved by the members. Members approved the recommendation of the board that there be submitted for consideration at the next meeting a form of contract covering the sale of the products of the industry, suitable for general adoption by the industry.

Huge Combine in Swedish Pulp Industry

The wood pulp grinding industry of Scandinavia, which had been in bad condition, has been revived by the formation about two years ago of a Swedish, Norwegian and Finnish combination which regulates production and sales. At this time the **Papier-Zeitung** 1929, 69, p. 2188, reports that there has been a very important transaction which is already capable of influencing not only the Swedish industry and the world market, but of influencing also the pulp and paper industry to a far greater extent. Ivar Kreuger, the man who built up the match trust, has now made through his firm Kreuger & Toll, the greatest financial transaction ever effected in the Swedish wood-using industry. A holding association has been organized which acquires the surplus stock of ten companies which are interested in 50 per cent of the wood products export and 450,000 tons of wood pulp and cellulose. This action affects the sulphite plants Bergvik, Ortviken, Sund, Svartvik, Nyhamn, Kramfors, the sulphate plants Sandarne, Holmsund, Frano, the wood grinder plants Matfors, Torpshammar, Ulvvik, and the paper plant Matfors.

The direct result will be centralization of the management. Production of sulphite pulp will evidently be increased and the wood wastes will probably be better utilized. It is assumed that Kreuger will work towards a further consolidation of the Swedish wood pulp industry.

Merco Nordstrom Wants Slogan

Offering $500 in cash prizes for the best slogans to be submitted by anyone prior to December 31st, the Merco Nordstrom Valve Company has launched a slogan contest that is expected to arouse much interest among petroleum engineers and others acquainted with this company's type of lubricated valves. The company is seeking an appropriate slogan to be used in connection with the publicizing of its valves and offers to forward a catalogue to anyone wishing to try his genius in creating a slogan of not more than ten words. The slogan may pertain to the service or function of Nordstrom valves or be any saying that suggests the successful service of the valves in various industries. At the present time the slogan "Won't Leak—Won't Stick" is used.

The first prize is $250 for the best slogan submitted. The second prize is $100. The third prize is $50. The next four prizes, $10 each and the next twelve prizes, $5 each, a total of nineteen cash prizes.

Anyone except employees of the company is eligible to enter and any one may submit as many slogans as desired, none to be more than ten words in length.

The Nordstrom valve's principal feature is its excellent lubrication. It is of the plug cock type and is highly leak resistant because the plug is surrounded by a film of lubricant under pressure that prevents any material in the line from leaking past.

Those who desire to enter the contest are urged to send for a catalogue which gives full details regarding the valves or to consult with engineers in the industry for details of the valve's merits. The company may be addressed at 343 Sansome Street, San Francisco, Calif.

Changes in Link-Belt Personnel

The Link-Belt Co., Chicago, announces the resignation of F. B. Caldwell, vice president of the Chicago plant.

W. C. Carter, formerly vice president in general charge of production at all Link-Belt plants, will assume the duties of vice president and general manager of the Chicago plant.

E. J. Burnell, who was manager of the Pittsburgh office, has been appointed sales manager of the Western Division, with headquarters at the Chicago plant.

Nels Davis, from the Chicago engineering sales force succeeds Mr. Burnell as manager of the Pittsburgh office.

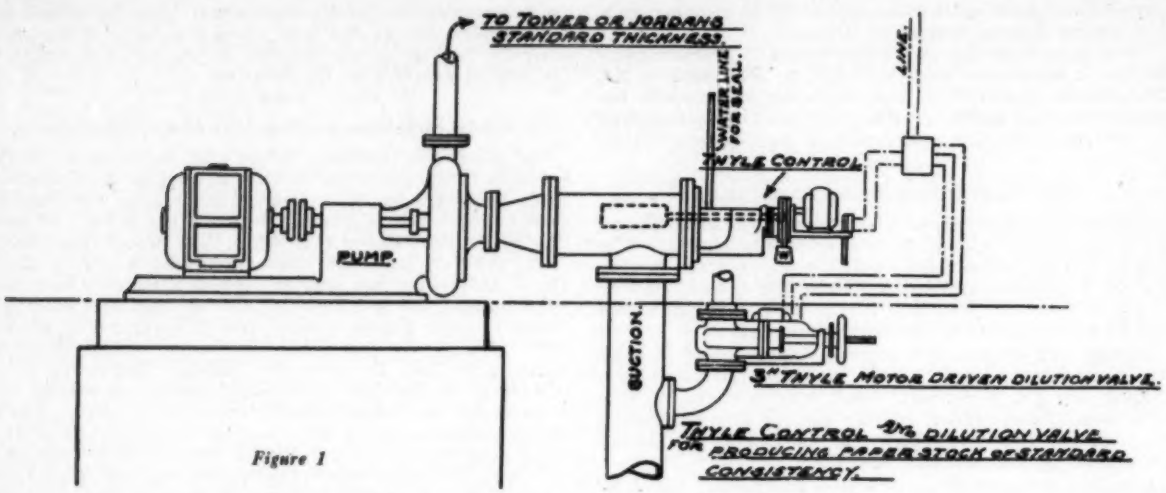


Figure 1

Consistency-Viscosity-Density Control

Close Regulation of Paper Pulp Maintained with New Type of Consistency Control

THE minuteman of modern industry is efficiency, which in a great part is obtained through automatic means by the control of various phases in the process of manufacture.

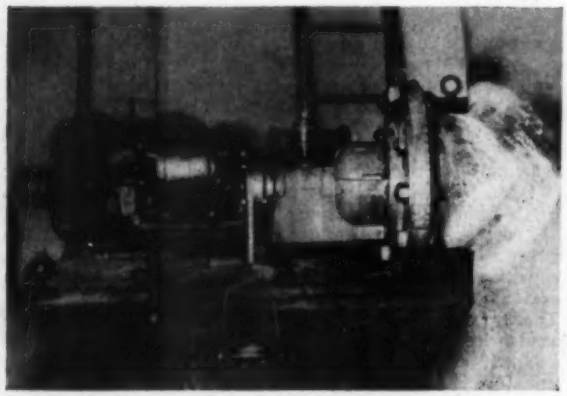


Fig. 2—Thyle Viscosity Controller

Fig. 3—Thyle Dilution Valve

Engineering, both mechanical and sales, has been the contributing factor to this automaticity and is reflected by increased production and a standardized product.

In certain processes where a substance in the solid phase is handled, the property of the "thickness" or viscosity or even the density of the liquid-solid mixture, can be advantageously used for the control of the flow. Where the change in density with concentration is very marked, this property may be used likewise in the case of homogeneous solutions. Tests under operating conditions recently completed in several plants have proven an easy method of automatically govern-

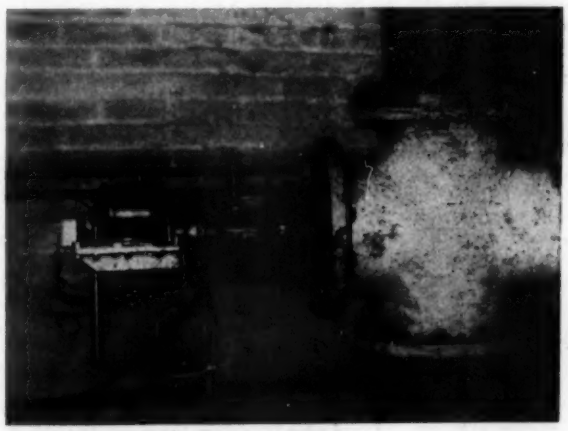


Fig. 5—Thyle Consistency Control mounted in discharge line

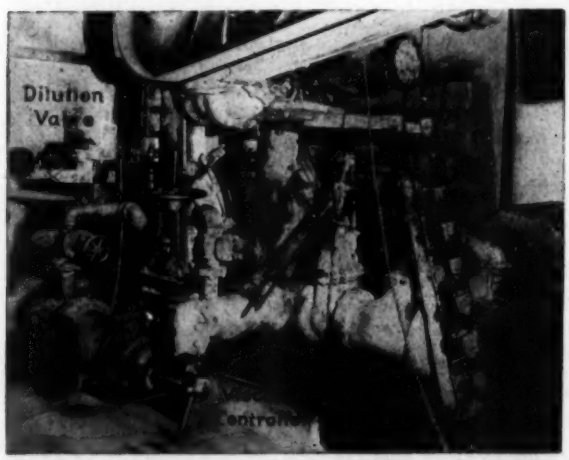


Fig. 4—Installation of Thyle Consistency Control Unit

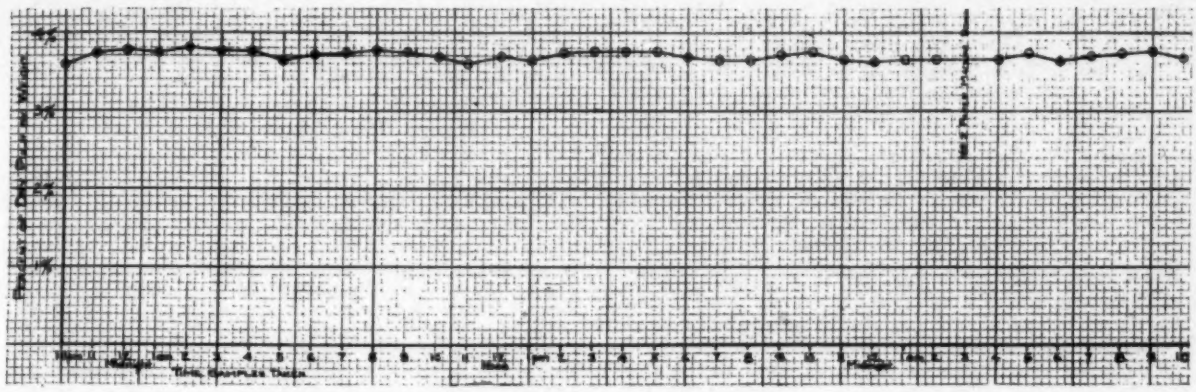


Fig. 6—Control of deckered chip stock by Thyle Control Unit

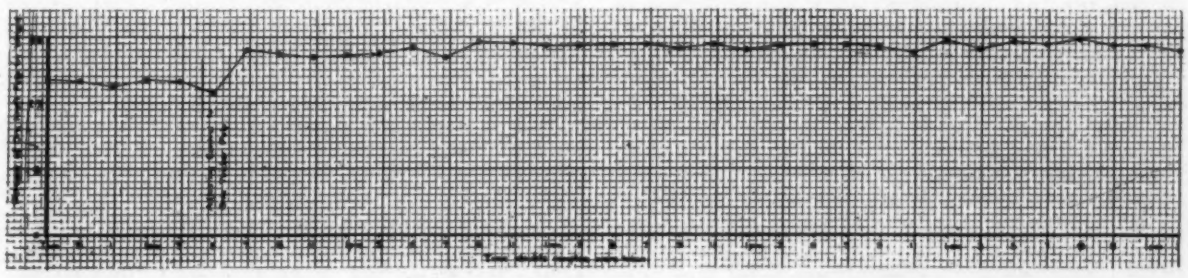


Fig. 7—Control of kraft pulp for top liner by Thyle Consistency Control

ing the flow of liquid and holding constant the concentration of solids per unit volume of liquid.

For several years, a conception of such a control has been in process of evolution by the Thyle Machinery Company, San Francisco, California, and is known as the Thyle Consistency Control Unit. For the past year, operating tests for efficiency and maintenance have been conducted in the plant of the largest manufacture of paper products in the West. The result of these tests is conclusive as to its application to the paper industry. Its practicability and flexibility having also been proven in the food stuff and chemical industry.

In brief, the principle thereof, Newton's Mechanical Law, "action and reaction are equal and opposite in direction". The apparatus (Figs. 1 and 2) consists of a smooth cylinder, rotated at a constant speed by an electric motor, in a pipe line or tank through which the material to be controlled is passing. As the consistency or viscosity of the pulp varies, a proportionate variable friction is exerted on the rotating cylinder. A thick pulp offering more resistance, requires greater power to operate the cylinder at a constant speed, a thin pulp less power, etc. The changes in power required to drive the cylinder are registered through mercury switches, which in turn open and close magnetically operated actuating coils in the reversing switch. The opening and closing of these switches direct the rotation of the motor on the dilution valve, (Fig. 3), and governs the amount of dilution necessary to equalize the variations in consistency.

In the paper industry the unit as installed, consists of the control, motor driven dilution valve, and reversing switch. The installation is usually made between the stock chest and stuff pump conveying the pulp to the machine chest (See Fig. 1), and is in successful operation with both plunger and centrifugal types. Typical installations are shown in Figs. 4 and 5. The results are even power load, uniform jordan operation and a smooth even stock on the paper machine. This can best be graphically explained as shown in Figs. 6 and 7. The samples indicated on the graphs were taken from the machine head box at regular intervals and consisted of 1000 cc. of pulp.

Pulpwood Resources of Alaska

The development of paper mills in Alaska is the subject of a note in the **Year Book of Agriculture** for 1928 as published by the United States Department of Agriculture. The author of this note, B. F. Heintzleman, is of the opinion that "within the near future the news of the world will be brought to our homes on paper made from spruce and hemlock trees now growing on the far-off Alaskan hills."

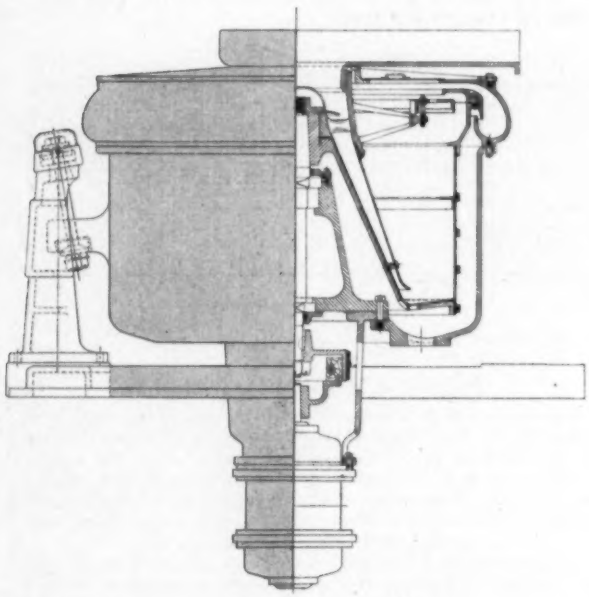
Concerning the location of the spruce and hemlock forests in Alaska, it is remarked that the principal pulpwood forests of Alaska occur in the panhandle extending down from the main body of the Territory along the west side of British Columbia for a distance of 350 miles. This region, known as southeastern Alaska, consists of a narrow strip of mainland and a paralleling chain of many islands penetrated and separated by an intricate system of narrow, navigable waterways. Its southern limits are about 600 miles northwest of Seattle, from which it is reached by the protected waterway known as the inside passage. The Japan current of the Pacific Ocean gives it a mild winter climate so that a zero temperature is seldom experienced, the snowfall at the coast line is not excessive, and the waterways are not icebound. There are numerous waterpower sites that can be developed for paper-mill use, the pulp timber is readily accessible to the many protected waterways, and the cheap transportation which water affords is available for moving the wood to the mills and the paper to the ports of eastern and western United States.

The present volume of standing timber on the national forests of Alaska has been conservatively estimated after extensive field work to be 78,500,000,000 board feet, of which 74 per cent is western hemlock and 20 per cent Sitka spruce, both good pulpwoods for newsprint paper. Studies by the Forest Service indicate that under a proper system of forest management the timberlands of this region can produce 1,500,000 cords of pulpwood yearly in perpetuity. In other words, timber to that amount can be removed from the forest each year and will be fully replaced by tree growth. Converted into newsprint, this represents a production of 1,000,000 tons, or more than 25 per cent of the entire present annual consumption of the United States.

New Centrifugal Separator is Designed to Eliminate Dirt from Paper Stock

The Bird Machine Company, South Walpole, Mass., builders of the Bird Screen, Bird Pulp Screen and other products identified with the making of cleaner, more uniform paper, announce the Bird Centrifiner. This machine embodies the remarkable effective centrifugal principle of dirt removal and fiber separation covered by the patents of the Centrifugal Engineering and Patents Corporation as originally employed in the Erkensator. The Bird Machine Company is licensed by the Corporation to make use of their patents and these plus the maker's extensive experience and engineering resources have combined to make the Bird Centrifiner a piece of equipment worthy of the greatest interest to all responsible for the cleanliness and quality of their product.

By means of an ingenious system of flow through the machine, the pure stuff from which all heavy and light im-



purities have been completely removed flows continuously from the Centrifiner. The principle is exceedingly simple as the accompanying diagram shows. It is like a simple gravity separator but with its effectiveness multiplied hundreds of times by means of centrifugal force. The heavy dirt is flung to the outer circumference of the whirling stock which is traveling at the rate of 90 miles an hour, the light dirt remains on the inner circumference and the clean, pure stuff, free from even microscopic impurities, is drawn off.

The significance of complete dirt elimination which a Bird Centrifiner installation makes possible must be apparent to all papermakers. Heretofore, the cleanliness of the finished sheet has been relative rather than absolute. Centrifugal separation sets entirely new standards. Now it is possible to make paper that is **really clean**, without variation. Other important operating advantages are secured at the same time. The finished sheet is stronger and more perfectly formed as a result of thorough separation of all the fiber bundles in passing through the Centrifiner. It is often possible to get satisfactory results with a lower grade of furnish and to reduce or eliminate hand sorting of rags and the like. When the Centrifiner is used before bleaching, there is a material saving in bleach because the bleach is all used for bleaching paper instead of dirt. The Centrifiner does away with rifflers, sand traps and magnetic separators and consequently reduces waste and speeds up the process.

The principle of centrifugal separation of paper stuff from dirt and impurities has arrived. Many engineers hail it as the outstanding contribution to the improvement of the papermaking process of recent years. Over five hundred successful installations testify to its efficiency and practicability. Our readers owe it to themselves to acquaint themselves fully with the means of applying this proved successful method of attaining truly clean paper.

History Being Made in New York

History in reforestation will be made 11:00 a. m. October 3 in Cortland county. The first tree to be set out under the new state-wide reforestation law known as the Hewitt measure, Chapter 195, Laws of 1929, will be placed in the ground in the town of Scott, ten miles northwest of the city of Cortland, by Lieutenant Governor Herbert H. Lehman. The second tree will be planted by the author of the law, Senator Charles J. Hewitt, chairman of the finance committee of the New York State Senate, and the third by Conservation Commissioner Alexander Macdonald. An area of five hundred thirty acres has been acquired by the State upon which will be planted immediately after the ceremonies 470,000 trees. Acting Dean Nelson C. Brown of the New York State College of Forestry, many members of the faculty of the college and others prominent in forestry from all sections of the State will be present.

This will be the beginning of the most comprehensive reforestation project ever launched by States or Federal Government. This plan of reclamation of the idle land in New York by the two Hewitt laws comprehends five million acres. Two plans are being operated simultaneously, one involves the reforestation by counties; the other by the State. The law governing the state plan authorizes the establishment of forests on areas not less than five hundred acres. Land units of this size are deemed essential to proper scientific management. The county law authorizes forestation of smaller areas. This project will eventually bring back into the producing column vast areas of the idle land that today are liabilities. These idle areas yielding no revenue are a burden upon other properties because taxes have to be paid on all land. The project will eventually cost millions of dollars. The first estimate has been $100,000,000. This work when completed will represent one of the most important public improvements the State has ever undertaken.

Warren Pumps in Southern Mills

In the September issue of THE PAPER INDUSTRY, the article descriptive of the mills of Southern Advance Bag & Paper Co., Hodge, La., and Gulf States Paper Corporation, Tuscaloosa, Ala., did not contain reference to the installation of Warren Pumps in these plants. This information was not known to THE PAPER INDUSTRY at the time the articles were published.

The Warren Steam Pump Company, Inc., Warren, Mass., installed sixty-one Warren centrifugal pumps in the Southern Advance Bag & Paper Company's plant, and there are forty-two Warren centrifugal pumps in the plant of the Gulf States Paper Corp. The new mill of the Greenville Insulating Co., Greenville, Miss., has eleven Warren centrifugal pumps.

Dr. Arthur St. Klein Succeeds Prof. Schwalbe

Dr. Arthur St. Klein has been elected president of the Berlin section of the Verein der Zellstoff und Papier-Chemiker u.-Ingenieure as successor to Prof. Carl G. Schwalbe. Doctor Klein is a voluminous contributor to the journals of the paper industry in all countries, being a good deal of an international character. There are perhaps few men in the industry who have had the wide technical experience of Doctor Klein who, in addition to a practical knowledge of pulp and paper manufacture in the United States, from his former connection with the Hammermill Paper Company, Erie, Pa., has served as consulting chemist and engineer to some of the foremost plants in Sweden, Germany and Italy. He is now completing an illustrated textbook on the manufacture of mechanical pulp in all its aspects. He has recently disposed of his villa in Berlin-Dahlem and will spend the winter with his wife's relatives in Hermsdorf u. Kynast.

Making Industry

International Paper Company Completes Modern Two Hundred Ton Kraft Pulp and Paper Mill at Mobile, Alabama

By HARRY E. WESTON
Staff Representative

THE activities of the International Paper Company in the South, although comparatively recent, have been most extensive and far reaching. Their introduction to the southern kraft industry was made through the purchase of the Bastrop Pulp and Paper Company of Bastrop, Louisiana, on June 15, 1925. This mill has a production capacity of 150 tons of kraft pulp and 120 tons of kraft paper per day.

Photographs of the International Paper Company's new mill at Mobile will be taken soon after the plant is finished and running. It is hoped that we can publish these in a later issue of THE PAPER INDUSTRY.

The next move was the purchase of the Louisiana Pulp and Paper Company, which was also located at Bastrop. This deal was consummated on March 15, 1927. It gave to the International an added production of 170 tons of kraft pulp and 110 tons of kraft paper per day. During the same year a 60-ton board machine was added.

To keep pace with the requirements, the Southern Division of International designed, built, and placed in operation the only pulp and paper plant in the State of Arkansas. The mill, located at Camden, started to function during March, 1928. It has a capacity of 150 tons of kraft pulp and paper per day and is modern in every respect.

The year 1928, likewise, saw the purchase of the Southern Paper Company at Moss Point, Mississippi. This mill, one of the oldest and best known kraft mills in the South, and operating a 100-ton pulp and paper plant, was placed in operation during 1913.

The acquisition of the Southern Paper Company then gave to the International four complete kraft pulp and paper mills in the southern territory with a daily output of between 500 and 600 tons of pulp and paper per day.

With these plants all functioning smoothly and with the knowledge gained from their operation, another plant was planned for erection in the same territory. This plant was to have a production of 200 tons of kraft pulp and paper per day, thus bringing the total production of the Southern International mills up to nearly 800 tons per day when this unit is placed in operation.

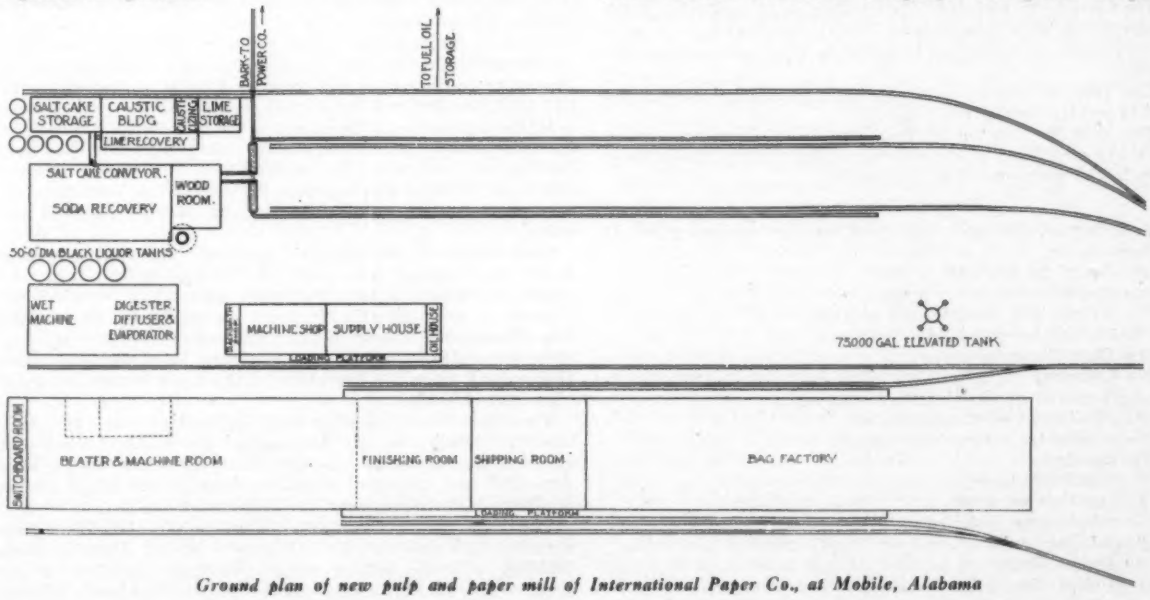
A site for the erection of their latest and most southern kraft mill was located about four miles directly north of the historic city of Mobile in Alabama on an area designated as Magazine Point. The U. S. Steel Corporation had a large shipyard during the World War only about three-fourths of a mile north of the site chosen for the erection of the mill. Since construction work began, the mill site has been named Sibert in honor of General Sibert who was instrumental in bringing the new industry as well as many other industries to Mobile. He was also the engineer in charge of the construction of the Alabama State Docks.

The mill site consists of about 96 acres and is located on the Alabama State Docks Railroad which connects with all ocean going lines as well as all railroads which enter Mobile. It is located in a region of large forested areas. Estimates place about 10,000,000 acres as short and long leaf pine areas within the State of Alabama.

The International Paper Company believes in forestry and in its program of activities plans for the erection of fire towers, and the development of an educational campaign among the schools and churches. As an added source of revenue to farmers it is also planned to purchase as much wood locally as possible. These purchases are made through timber buyers scattered through the territory. The buyers are not only familiar with the timber of the region but are also acquainted with many of the people.

The water supply for the mill is furnished by eight deep wells. The wells are located on the mill property and are from 350 to 500 feet deep. These wells have a total rated capacity of 6,000 gallons per minute. Layne multistage motor driven pumps are used for the pumping installation.

One of the most unusual and yet interesting facts in the development of the plant was the decision to erect no power house of any kind. All of the electrical energy for power and all steam for process work is to be purchased from the South Eastern Production Company. The power company



Ground plan of new pulp and paper mill of International Paper Co., at Mobile, Alabama

delivers both the electricity and steam to the mill buildings.

Building Construction

A few general figures will indicate the size of the operation. Approximately 2,000 carloads of building material, machinery, and supplies were delivered by rail to the site. One carload of steel sash putty was used for the windows and over 4,000,000 common and face brick were used for the mill buildings. Seventeen carloads of special brick work cement and 3,600 yards of sand were required for brick work.

The entire project has been grouped around eight buildings, namely: Woodroom; soda recovery building; caustic building; building housing digesters, diffusers, and evaporators; main building housing beater and machine rooms, finishing room, shipping room, and bag factory; machine shop and supply house; laboratory and first aid; and the office.

The woodroom building is 69 feet wide by 88 ft. 6 in. long and is of reinforced concrete, brick, and steel construction. It consists of one story and basement, most of the basement being above ground level.

The soda recovery building, immediately adjoining one of the long sides of the woodroom, is 199 feet by 106 feet. It is also of reinforced concrete, brick and steel construction, and is two stories in height. The caustic building located near the recovery building, of reinforced concrete, brick and steel construction, is 294 feet long and 50 feet wide. The causticizing department section is three stories high while the balance of the building is one story.

The pulp mill building, housing digesters, diffusers, evaporators, etc., is of reinforced concrete, brick and steel construction with a gypsum roof deck and a built-up waterproof roof. The building is 219 feet long, 100 feet wide, and 98 feet high over digesters and diffusers. The digester and diffuser room section is three stories high, while the wet room is two stories.

The paper mill section or the main building housing the beater room, machine room, finishing and shipping rooms, and bag factory, like the other buildings mentioned, is of reinforced concrete, brick and steel construction with a gypsum monolithic rail embedded roof deck covered with a built-up composition roof. This building is 1,427 ft. 10 in. long and 157 feet wide. The beater and machine room section comprises one story and basement, while the bag factory is two stories in height. A switchboard room for incoming electric power is located on the end of the beater room farthest from the machine room.

The machine shop and supply house, a one-story building, has been constructed of reinforced concrete, brick and steel construction, as were all of the buildings housing process equipment. It also has a gypsum roof deck covered with a built-up roof. The building is 300 feet long and 50 feet wide.

The laboratory and first aid building is of one story brick construction with composition shingle roof and is located convenient to all buildings to assist in plant control and test work.

The office is located near the main entrance to the plant and is architecturally old English.

The relative location of each of the buildings mentioned, with the exception of the office and laboratory, is shown in plan in the accompanying illustration.

Process Equipment

A listing of the most important process equipment would include—

2—American barking drums
2—88-inch Carthage chippers
2—Ryther and Pringle chip screens
2—36-inch Lombard chip crushers
8—Blaw-Knox digesters
20—Diffusers
1—Swenson quadruple effect evaporator
8—Manitowoc disc evaporators
8—Manitowoc rotary incinerators
8—smelters
8—dissolving tanks
1—causticizing tank
4—presettling tanks
10—settling tanks
3—Mount filters
1—Vulcan lime kiln
4—Packer flat screens
3—Bird pulp screens
5—Oliver thickeners
5—Allis-Chalmers rod mills
8—Dilts beaters
3—Dilts continuous "broke" beaters
10—Shartle jordans—No. 6 special
3—Shartle jordans—No. 2 Miami
2—Beloit fourdriniers—210" wires
1—Beloit Yankee—172" wires.

Wood Storage

Provision has been made at the plant for storing approximately 5,000 cords of wood. About 50 per cent of the wood will be delivered to the mill on barges and will be conveyed to storage from the barges with a chain conveyor. The rest of the wood will be brought in by rail and auto truck.

This storage permits a sufficient quantity of wood on hand at all times to meet any emergency, and not enough to prevent the wood from being used every two or three months. Pine begins to deteriorate after two or three months in storage. Therefore, it has been deemed advisable to store the wood in only such quantities as can be easily utilized within definite time limits.

Portable conveyors permit easy handling of the wood from storage to the permanent wood yard conveyor installations which carry it to two American barking drums.

Wood Room Operations

The American barking drums are located in the wood yard outside the wood room. They are installed facing each other so that they both discharge into two adjoining and parallel conveyors. The wood, entering from the ends farthest apart, works its way through the drums and discharges into its respective conveyor which conveys and distributes it to one of two 88-inch Carthage chippers. The bark refuse is conveyed away from the barkers and is used as fuel by the Alabama Power Company.

The chippers are located on the main floor of the wood room but are supported on individual and separate foundations which extend through to the basement level. Each chipper is individually driven through a motor and belt drive, the motor installed on the basement floor and the corresponding belt extending upward through an opening in the floor to the chipper pulley. Such an installation reduces floor vibration to a minimum.

The chips produced by the chippers are elevated to two, new type Ryther and Pringle chip screens which are also located on the wood room floor. Again vibration has been reduced to a minimum by setting the screens on a foundation that extends upward to the wood room floor from the basement floor level.

The only equipment on the main floor of the wood room that is supported by the floor is such conveyor equipment as is necessary for handling the wood and chips, a Rogers Type-843 knife grinder, and the motors for driving the chip screens.

In the basement of the wood room and located above the floor level are installed two 36-inch heavy type Lombard chip crushers. One crusher is installed for each screen and receives by gravity the oversize rejects of its corresponding screen which are reduced in size by passing through the machine.

Continuing as two separate systems, the screened chips from the chip screens and the crushed chips from the crushers together enter Sturtevant fans which by air blast conveys them to the chip bin above the digesters. Each of the two Sturtevant fans is directly connected to a 200 hp. synchronous motor. The fans also discharge into individual pipes that extend from the basement of the wood room to a point above the chip bin.

Two Sturtevant planing mill exhausters, one for each screen, furnish the air to convey the sawdust from the screens to the refuse conveyor carrying bark, where it is deposited and conveyed with the bark to the plant of the Alabama Power Company for their use as fuel.

The chip bin is U-shaped and of boiler plate steel construction. It extends the full length of the digester room building with the bottom of the bin high enough from the floor to give plenty of head room. The bin has been designed

to handle about 600 cords of wood in chip form or enough chips for 36 hours supply.

Two steel hoppers on overhead tracks can be easily moved along the bottom of the bin from one digester to another. Such equipment permits easy filling of the digesters.

Pulping Operations

Four measuring tanks for liquor are located on the digester room floor. From these tanks the necessary liquor for any digester charge is drawn.

The digester installation consists of eight Blaw-Knox vertical digesters. Each digester is 8 ft. 2 in. inside diameter and 24 ft. 6 in. high and has a rated capacity of approximately four tons. All of the digesters are completely insulated with 2-inch Johns-Manville canvas covered 85 per cent magnesia blocks. Steam lines to the digesters are insulated in the same manner.

Above the digester room floor are four cyclones designed with catch-alls into which the pulp is blown from the digesters and they in turn discharge it into their corresponding diffusers.

The diffuser installation consists of twenty units arranged in a series of circles around a stock chest and with the top on a level with the digester room operating floor and immediately adjacent to it. There are 20 diffusers in each series so that the pulp from any cyclone would under ordinary circumstances be discharged into any one of its related diffusers.

The diffusers are equipped with the ordinary type discharge openings which face the chest into which the stock is discharged.

The pulp contained in the stock chest is pumped to the pulp screens, first receiving a preliminary screening by passing over four Packer flat screens where all oversize material is removed. Following the preliminary screening, the pulp flows by gravity through three Bird pulp screens which in turn discharge the screened pulp to five Oliver thickeners. The thickeners discharge into five Allis-Chalmers rod mills, one mill for each thickener. This discharge from the rod mills passes to a common stock chest installation.

The entire wet room installation is arranged in the form of steps with the row of rod mills as the bottom step, the thickeners the next step above, the Bird screens as the third step, and the Packer screens at the top. Such an installation makes for simplicity and ease of operation.

Liquor Preparation

Four 30-ft. diameter black liquor storage tanks, located outside the pulp mill building, receive the black liquor for storage and hold it until needed by the evaporators. The tanks are of boiler plate steel construction. The Swenson quadruple effect evaporator installation, installed on a mezzanine with the units of the evaporator arranged parallel to the row of digesters and on the side of the building facing the recovery plant building, receives the black liquor from storage and evaporates it to a point that can be handled by the disc evaporators.

The Swenson evaporator has welded steel bodies, cylindrical in shape, with dished heads, and uses a heating surface made of horizontal tubes. The bodies are 12 feet in diameter, and 18 feet high, and are designed to take steam at about 25 pounds pressure. The quadruple unit discharges vapor from the fourth effect to a Schutte-Koerting multi-jet condenser using a barometric arrangement. The dilute black liquor is fed to the second effect from a liquor heater from which it passes to the third and fourth and then to the first effect in order to take advantage of the higher temperature existing in the first effect.

The partially concentrated black liquor from the Swenson unit is pumped to the recovery plant for further concentration and reduction.

Eight Manitowoc disc evaporators have been installed in this department in conjunction with eight Manitowoc 9-ft. x 20-ft. rotary incinerators, eight smelters, and eight dissolving tanks. In this way, there are eight separate and distinct sets of equipment.

The hot gases from one smelter pass to and through its corresponding rotary, and the gases from the rotary in turn pass to and through its corresponding disc evaporator.

In the recovery building the smelters extend from the ground floor level upward above the operating floor to a point about level with the top of the rotary incinerators. The rotary incinerators are installed with foundations on the operating floor. The disc exaporators are set up on a structural steel framework with the bottom of the evaporators about 9 feet above the floor. In this way the hot gasses from the smelters have practically a horizontal travel through the rotaries and disc exaporators. After passing through the disc evaporators, the gases are brought together in a common flue and let to a stack. The stack is of concrete —9 feet in diameter at the top and 205 feet high. It is used only in connection with the recovery plant.

The further concentrated black liquor from the disc evaporators enters the rotary incinerators where additional evaporation and partial reduction take place, such evaporation and reduction, in fact, that the discharge from the unit is in the form of ash rather than as a concentrated liquor. To this ash, designated as black ash, enough salt cake is mixed to make up for the loss of alkali in the manufacturing cycle and the mixture fired into the smelting furnaces.

The smelting furnaces are of the cylindrical type—19-ft. 4-in. high and 12-ft. 6-in. in diameter. Boiler plate steel, ¼-inch in thickness, has been used for the shell. The lining for the furnaces is soapstone and is 22 inches thick. It is insulated from the shell with special heat resisting material. Both the tops of the smelters and the smelt spouts are water-cooled. The air supply to the units is supplied through three air nozzles to a smelter with the air being furnished for the entire installation by two No. 10 Sturtevant slow speed blowers.

The line of dissolving tanks is installed at a slightly lower level than the base of the smelters. Such an installation permits the smelt to flow freely from the furnaces into the tanks and minimizes any tendency of explosion.

All of the tanks are 12 feet in diameter and 9 feet high, and are equipped with mechanical agitators. The tanks were fabricated by Hedges, Walsh, Weidner of Chattanooga.

In the layout for the smelter and dissolving tank installation, provision was made to permit inspection of the smelt discharge from the operating floor. A sufficiently large opening has been left in the floor on the spout side of each unit. This opening is guarded with welded pipe railing. The air supply piping to the smelters is located on the same side of the units as the spouts.

The fan equipment for the smelter units is located on the basement or first floor level of the recovery building. A small, brick enclosed room with the exception of a single door opening is also located on this floor. This room houses all electrical equipment for the department—switches, starting boxes, etc., and thus eliminates any opportunity for trouble with dirt.

The green liquor from the dissolving tanks is pumped to storage. The storage tanks for the green liquor are located at one end and side of the caustic building in space between the caustic building and the recovery building. Six boiler plate steel tanks about 24 feet in diameter constitute the storage equipment for the green liquor.

The green liquor is then pumped from storage to the causticizing department. The causticizing department section of the caustic building as mentioned previously, is three stories high while the balance of the building is only one story.

Outside of the causticizing equipment, the building contains storage space for both salt cake and lime and shelters the lime recovery kiln. The salt cake is transported from storage through an elevated runway and conveyor to the operating floor of the soda recovery building.

The green liquor is pumped to the causticizer which consists of one large boiler plate steel tank equipped with a large, heavy perforated metal basket and an agitator. In this tank the liquor is causticized with lime and then pumped to four presettling tanks equipped with agitators where the white liquor is decanted and the remainder pumped to 10 settling tanks where final settling of the sludge takes place. The sludge, in both cases, is pumped to three Mount filters where it is recovered in cake form allowing the liquor to go back to storage for supply dissolving tanks.

The final settling tanks are also equipped with agitators for both mechanical and air separation. Two line shafts, one to five tanks, equipped with throw-out clutches operate the

agitator equipment. The clear liquor is decanted from these tanks through a 4-inch pipe to storage.

The causticizing tank is located on the first floor of the caustic building near space allotted to lime storage and close to lime recovery kiln. The other tanks are installed on the second floor of the building but extend upward and through the third floor.

The lime mud from the three Mount filters is conveyed to a Vulcan 9-ft. x 100-ft. lime recovery kiln where it is recalcined for use again in causticizing. The lime kiln is lined with LaClede Christy Superfrax.

On the first floor of the caustic building are also located a number of Goulds Pumps, Inc., and Baker Mfg. Co. centrifugal pumps, and an Imperial type Ingersoll-Rand air compressor. The centrifugal pumps are used in handling sludges and liquors in the department, while the air compressor furnishes air for agitation.

Beating and Refining

The pulp stock, ready for additional treatment before fabrication into a sheet of paper, is treated in Dilts beaters and Shartle jordans.

The beater installation consists of six specially designed Dilts high speed 72-in. x 60-in. beaters, three for each of two 210-inch fourdriniers. The tub sides are of cast iron with an inside length of 30 feet. The bottoms are of concrete with a width of 116 inches. Two additional beater units with rolls 66-in. x 60-in. are used for the Yankee machine. The beaters are all individually driven through a short center tentacular drive and synchronous motor.

After the stock has received proper treatment in the beaters, it is passed through the jordans. The jordan installation consists of ten Miami No. 6 for the two fourdriniers, and three Miami No. 2 for the Yankee. All of the jordans are directly connected to synchronous motors.

The beaters and jordans are located in the same room and on same floor level as the three paper machines.

Paper Machines

Two Beloit fourdriniers are practically duplicates of one another and are designed to operate 1,000 feet per minute. Each machine has a wire 210 inches wide and 80 feet long. The wire part of each machine is of the Beloit patented type which is adjustable as to height and removable as a unit from the breast roll to and including guide roll, table rolls, wire rolls, save-alls, and suction boxes. Likewise, the wire parts are equipped with the Aldrich high speed, motor driven shake which can be adjusted while running as to speed and length of stroke.

All of the wire rolls, table rolls, and the breast rolls for the two 210-inch fourdriniers are carried in Timken roller bearings. There are six suction boxes on each machine. The boxes are of non-corrosive metal and are equipped with maple covers. The boxes are arranged to oscillate.

The couch roll on each machine is of the Beloit cantilever suction type and is 36 inches in diameter. Each roll has a direct drive and is equipped with a cantilever device on the rear journal to support the roll, while changing wires, in an overhung position. No crane is necessary in changing wires with this type of roll when it is used with the Beloit patented wire carriage.

The vacuum requirements of the fourdrinier parts of the two fourdrinier machines is met with Nash vacuum pumps.

The press sections of the machines are of special design for producing kraft paper at high speed. The first press of each machine consists of a direct driven, 30-inch diameter, Beloit suction press roll and a rubber covered top-pressure roll. Both the top and bottom rolls are mounted in anti-friction bearings. The second press rolls of these machines are both rubber covered, while the third press is equipped with a rubber covered bottom roll and a granite top roll. These rolls are carried in Timken roller bearings. Each press is equipped with a doctor and broke conveyor to carry "broke" to the front side of the machine.

The felt rolls on the presses are also rubber covered and are mounted in Timken bearings.

One of the two machines is equipped with a smoothing press which is mounted on the dryer frames.

The fourdriniers have thirty-eight 60-inch diameter dryers on each machine. The dryers are bored inside, are carefully turned and given a high polish. Each dryer is mounted on Timken roller bearings and is provided with a continuous circulating and filtering oiling system. The dryers are driven by a silent chain drive which is enclosed and designed to run in oil. The drive is likewise designed to prevent all backlash and is practically noiseless in operation. The sprockets on the dryer journals are approximately one-half the diameter of ordinary gears. Such a drive makes the backside of the dryer section as convenient for the operator as the front side. It even permits the removal of "broke" from the backside.

One of the two fourdriniers has only one stack of calenders with eight rolls in the stack. The second machine, the machine with the smoothing press, has two stacks of calenders with eight rolls in each stack. All of the calender rolls are equipped with collar oiling bearings. A motor lift is provided for raising and lowering the rolls in each stack.

The reel on each of the two fourdriniers is of the improved Aldrich uniform speed type. The main drum is 36 inches in diameter and is mounted in Timken bearings. The steel paper-reeling spools are also mounted in Timken bearings. Heavy water-cooled unwinding stands are supplied for unwinding the paper from the spools to the winder. Tension is applied to the unwinding shaft by means of an air brake which can be quickly and easily regulated.

Each winder on the two fourdriniers is equipped with Beloits' latest improved double-drum winder and slitter. This winder was designed for safe operation at high speed and is very heavy in construction. The finished roll of paper is removed from the winder automatically without the use of a crane. A small roll in arms is located directly behind the back winder drum. The arms, raised by air, cause the small roll to push the finished roll of paper from the winder on to a platform. It is also possible, by operating an air valve lever, to raise or lower a saw tooth slitter attachment, and to apply an air brake to quickly stop the winder. The mountings for all running parts of the winders are roller bearings.

The slitter part of the winder is low and has been designed to permit the operator to easily manipulate the paper. The bottom slitters are mounted on individual motors and can be easily adjusted for various widths of sheets.

Beloit spiral bevel gear drives are used to connect the main drive to the various sections of the machine. The gears and pulley shafts are mounted in roller bearings. These drives are provided with an oiling system which permit the gears and pinions of hardened steel to constantly run in a bath of oil and to oil automatically the bearings inside the gear housings. The drives are operated by means of a hydraulic friction shifter with a control valve located in a convenient place on the front side of the machine.

The third machine is a Yankee machine which is said to be the widest machine of this kind in the world. This machine is equipped with a wire 172 inches wide and 60 feet long, and is designed to operate at 600 feet per minute. The wire part of the Yankee, as in the case of the two fourdriniers, is of the Beloit patented type. This part is designed to permit adjustment as to height and to be removed as a unit from the breast roll to and including the guide roll, table rolls, wire rolls, save-alls and suction boxes. It is equipped with an Aldrich high speed motor driven shake which permits adjustment, while in operation, as to number and length of strokes.

The table rolls, wire rolls, and breast roll of the machine are carried in Timken roller bearings. The fourdrinier part is also supplied with three suction boxes of stainless steel equipped with hard maple covers. The boxes are arranged to oscillate.

The couch roll is 32 inches in diameter and is of the Beloit patented cantilever suction type. It has a direct drive and is arranged with a cantilever device on the rear journal to support the roll, when changing the wire, in an overhung position. The couch is also supplied with a top couch roll which can be used with a pick-up felt to deliver lightweight paper to the dryers. This roll is provided with a motor lift.

The press section consists of one pair of press rolls. Both of the rolls are rubber covered and are mounted on Timken roller bearings. The felt rolls are also rubber covered and mounted in Timken bearings. The top felt of the press section has been designed to run as a pick-up felt.

A 36-inch pick-up dryer with a rubber covered pressure roll

has been provided for use when running the pick-up felt. The dryer has an extra thick shell, has been specially ground, and is mounted in Timken bearings.

The dryer section consists of six dryers preceding and four dryers following the Yankee dryer. The section preceding the Yankee dryer are mounted two-deck and is equipped with Timken bearings. These bearings are lubricated by a continuous oiling and filtering system. These dryers are driven by a silent chain drive. This drive is enclosed and designed to run in oil. A Sheahan rope carrier is provided to carry the paper through this section of the dryers to the Yankee dryer.

The Yankee dryer, said to be the largest dryer built, is 12 feet in diameter, and has a 177-inch face. It is bored inside and finished outside with a very high polish. This dryer is equipped with two heavy vibrating doctors, and two pressure rolls and a dampening felt under the dryer. The pressure rolls are equipped with a quick release arrangement, while the dampening felt is equipped with brass felt rolls.

The dryers following the Yankee dryer, like those preceding, are mounted two-deck in Timken bearings. The bearings are also connected to the oiling and filtering system which serves the preceding dryers. The dryers are driven by a silent chain drive.

A five-roll stack of calenders constitute the calender arrangement for the machine. The rolls are equipped with collar oiling bearings and a motor lift.

An improved Aldrich uniform speed reel and a Beloit improved double-drum winder and a slitter constitute the slitting and winding equipment of the machine. The main drum of the reel is 36 inches in diameter and is equipped with steel paper reeling spools. Both the main drum and reeling spools are mounted in Timken bearings. The unwinding stands are water-cooled and of heavy construction. The tension is applied to the unwinding shaft by means of an air brake for quick and easy adjustment. The winder and slitter was designed for safe operation at high speed and operates in the same manner as similar equipment on the two fourdriniers.

The drive on the machine is similar to the drives on the fourdriniers. Beloit spiral bevel gears connect the main drive to the various sections of the machine. The gears and pulley shafts are mounted in roller bearings. Gears and pinions are hardened steel. The drives are provided with an oiling system to keep the gears and pinions constantly running in a bath of oil and to automatically oil the bearings inside and outside the gear housings. The drives are operated by means of an hydraulic friction shifter with a control valve located in a convenient place on the front side of the machine. Each of the two fourdriniers is driven through an individual 400 hp. Terry steam turbine, while a 225 hp. unit is used to drive the Yankee machine.

The Fulton system of drainage control is used on each of the machines for circulating steam and removing condensate from the dryers. Each machine is also equipped with an individual Bowser oil system, two Vickery felt conditioners, and Frossard doctors for the dryers and other parts of the machine.

Machine Shop

Appreciating the importance of speed in all repair work, the machine shop was designed to handle any repair job that might be received in the course of a day's work.

The major equipment installed in the shop include the following:

1 24-ft. Gould and Eberhardt shaper—back geared.
2 16-in Canady floor type grinders
1 American radial drill press 3½-inch radius
1 24-in. sliding head drill
1 Foote-Burt bolt cutter
1 24-in. x 14-ft. LeBland lathe
1 20-in. x 14-ft. Lodge & Shipley lathe
1 42-in. x 22-ft. Bradford lathe
1 24-in. Cincinnati shaper
1 Le Bland Universal slitter grinder
1 Rock River 48-in. throat style punch and shear

In addition to the shop equipment is a Farrel roll grinder. This grinder is located in the finishing room at a point under a monorail conveyor to permit easy handling of rolls. The grinder, as in common practice, is supported on a foundation entirely free from the building to avoid any difficulty from vibration.

A blacksmith shop adjoining the machine shop complete the items relating to shop equipment.

Housed in the same building as the blacksmith shop and machine shop is the storeroom or supply house and the oil house. All spare parts, belting, fittings, tools, etc. that are required for a mill of this kind are conveniently stored in the supply house. The oil house serves simply as a storage for oils and greases.

Laboratory

The laboratory, housed in the laboratory and first aid building, has not been designed as a research laboratory but rather for mill control. All general laboratory equipment and apparatus was supplied by Sargent & Co. The specific pulp and paper testing equipment has been purchased from various sources and includes: 3 automatic Mullen testers; 2 Elmendorf tearing testers; 1 Schopper folding endurance tester; 1 Schopper tensile strength machine; 1 Ingersoll glarimeter; 1 La Motte comparator; 1 Valley sheet machine with hydraulic press, couch mold, and oven; 1 Williams paper testing oven; 1 Williams pulp testing oven; and 1 Cady micrometer Type M.

In addition to the laboratory, the building contains an office for the chemist, and the first aid department. The first aid department is equipped to handle any emergency operation.

Miscellaneous

Most of the equipment in the plant is direct-connected to individual motors. Rubber belting has been used for the belt driven machines. There are 195 motors in the pulp and paper mill and all of them are Allis-Chalmers. Practically all of the process pumps, with the exceptions of stock pumps and pumps in caustic room, are Allis-Chalmers. Beloit plunger pumps have been used for stock, while Goulds Mfg. Co. and Baker Mfg. Co. supplied the pumps for the causticizing department. Nash Hytor units have been used as vacuum pumps on the flat boxes, suction couches, and suction presses of the various machines. Chain for all wood conveyors was supplied by the Chain Belt Co. of Milwaukee. Push button control was established on all electrically driven equipment throughout the plant.

The pulp and paper produced by the plant is to be weighed on five Howe Weightographs. One 15-ton Stupp crane with span of 97-ft. 9-in. is installed over the two fourdrinier machines and a 12-ton Stupp crane with a 51-ft. span is located over the Yankee. A Pax automatic telephone system with 75 stations has been installed to permit easy communication throughout the entire plant. The shipping platform on either side of the main building is sufficiently long to permit spotting of 16 cars on a side. The platforms have been built just car door height. An overhead trolley system conveys the paper from the machine room to the finishing, shipping, and bag room. A Seybold sheet cutter, Camachine slitter and rewinder, Beloit sheet cutters, and a Moore and White layboy constitute other items of equipment. An air compressor unit has also been installed in the basement of the main building to supply the air needs of the department. Three 62-in. x 48-in. Dilts continuous broke beaters are located in the basement near the finishing end of each paper machine to handle the "broke."

The bag factory will be equipped and operated by the Continental Bag and Paper Co., a subsidiary of the International Paper Co.

Personnel

All key men for the operating personnel will be obtained through the promotion of men connected with the other Southern International Plants. It is expected that the mill with an investment of approximately $5,000,000 in site and plant, will employ between 400 and 425 people when it gets into production, and an additional 300 in the bag factory.

33,000 Carloads of Wood Waste Available

More wood is wasted than is put to profitable use, says a statement issued by Axel H. Oxholm, director of the National Committee on Wood Utilization of the Department of Commerce, in releasing the committee's report "Survey of Non-utilized Wood in North Carolina."

The survey covered by this report, the result of a year's work, discloses the fact that 33,000 carloads of waste wood

are annually available in North Carolina for the use of wood-using industries.

When it is considered that such important commodities as pulp and paper and fiber products, charcoal and wood chemicals, lath, excelsior, and other materials used in everyday life may be made from wood waste, the wonder is that merchantable standing timber should still be used by industries for such purposes. By an intelligent co-ordination of their raw material policy, wood-using industries could supply at least a part of their raw material needs from the nation's wood waste pile.

The survey of nonutilized wood in North Carolina was made for the purpose of ascertaining the location, kind, and quantity of nonutilized wood in sawmills and woodworking plants. It was a part of the plan of the National Committee on Wood Utilization to make similar surveys in every state in the Union. The Virginia survey, the first of the series, was finished over a year ago, and the third of the series is now being conducted in Maryland. The committee's plan calls for the making of surveys in contiguous states as far as possible.

Created in 1925 by Herbert Hoover, as Secretary of Commerce, the National Committee on Wood Utilization has for its primary object a more intelligent utilization of wood. Its effort to put wood waste to profitable use, therefore forms an important part of the committee's program.

Green Tester Infringes Schopper-Riegler Patent

By a decision of the United States District Court in Boston, which was handed down on September 17, the Green freeness tester is declared an infringement of the Riegler patent, No. 1,193,613, under which the Schopper-Riegler beating tester is made. The Star Brass Manufacturing Company has been enjoined from further manufacture and sale of the Green tester and must account for damages resulting from its infringement of the Riegler patent. The Schopper-Riegler freeness tester is marketed in the United States by Foreign Paper Mills, Inc., 72 Duane Street, New York, who are sole agents for Louis Schopper, Leipzig, Germany. The text of the Court's opinion follows:

DISTRICT COURT OF THE UNITED STATES
District of Massachusetts

Equity No. 2943
LOUIS SCHOPPER & FOREIGN PAPER MILLS. INC.
vs
STAR BRASS MANUFACTURING COMPANY
OPINION
(17 September 1929)

MORTON J. This is a suit for infringement of patent to Reigler No. 1,193,613 dated 8 August 1916, application filed 8 September 1913. It was heard in open court on oral and documentary evidence. The plaintiff's title is admitted.

The facts are as follows: The stock of which paper is made undergoes in the paper-making machine a process called "beating". The effect of beating, carried to the proper point, is to make the paper much stronger; but if carried too far weakness results. It is, therefore, necessary to stop the beating at the right stage. As the appearance of the stock furnishes no guide on this point, the beating was formerly controlled by mere guesswork, or by the feeling of it, or by dipping out stock from time to time and making test sheets of paper,—methods which were far from satisfactory. In 1910 Skark in Germany published in "Der Papier Fabricant", a trade journal, an article on the relation between the condition of the pulp as respects beating,—its "fineness" so-called,—and the rapidity with which the water of suspension drained from it, that the finer the pulp, the slower the water left it; and he published sketches of a simple machine for utilizing this relation in the manufacture of paper. The rate at which the pulp loses its water of suspension is called the "freeness" of the stock.

This discovery of the relation between freeness and beating opened the way to much simpler methods of determining when the beating had been carried far enough. Freeness is easily tested by pouring the liquid stock on a screen, generally of fine copper wires. The stock being over 99 per cent water, there is at first a rush of water through the screen. As the pulp fibers accumulate thereon, they clog the passage of water. The last of the water drips slowly from the matted pulp. All this was well understood in the art before the application for the Riegler patent. Suitable instruments had been devised to take advantage of it in the operation of papermaking machines. For instance, Skark in 1911 published a description of a simple machine which made a graphic curve of the rate at which the water left the stock, one side being time and the other, units of flow.

Riegler was the first to see that it was possible to get all necessary information about the condition of the stock for the purpose stated in a much simpler way, by merely separating the freeness water, which came through the screen when the stock was first poured upon it, from that which more slowly drained from the pulp,—the coarser the stock, the higher the relative amount of freeness water, and vice versa. He, therefore, arranged below the screen a receptacle which had a small outlet at the bottom and a larger outlet on the side higher up. When stock is first pourd into this tester, the flow of water greatly exceeds the capacity of the bottom outlet. The water rapidly fills the container to the side outlet and escapes thereby. As the fibers accumulate on the strainer, the flow is slowed down to an amount which can be taken care of by the bottom outlet. By collecting seperately the freeness water which passed through the side outlet and the other water which passed through the bottom outlet, Riegler having calibrated the instrument was able to determine the condition of the stock with respect to freeness, and hereby with respect to beating. His method which eliminates the troublesome element of timing the flow proved extremely simple, quick and serviceable, well adapted for use in papermaking mills. In practical use it has superseded all others. It originated with him. There is no suggestion of it in the prior art. His patent is a pioneer patent of much merit in the narrow field to which it relates.

The defendant's apparatus unquestionably embodies the Riegler principle and is designed on substantially the same lines as the Riegler apparatus.

There is, however, this difference between them. In the Riegler apparatus the water from each outlet is collected in separate vessels, and the stock is judged by the relative amount in each; while in the defendant's apparatus only the water from the larger opening,—the freeness water,—is collected, and the determination is made by the proportion between it and the total amount of stock which went into the hopper. In other words Riegler does not measure the amount of stock which goes into the hopper, but gets his results by comparing the amounts of water which pass through the two openings, while the defendants measure the amount of stock put into the hopper and compare it with the amount of water which passes through one opening. The underlying idea is precisely the same; and the Riegler apparatus can be used in this way without any change.

The difficulty with the case is due to the fact that Riegler seems not to have thought of using his tester in this latter way. His patent seems to have been drawn upon the supposition that the water from both outlets would be collected and the amounts compared. Some of the claims, certainly,—the defendant says all of them,—include as an element means for collecting (in the sense of gathering together for the purpose of measurement) the water from **both** outlets. This is true of the second claim which includes **"independent collecting vessels,"** of the fifth which includes **"a collecting vessel in communiation each of said outlets,"** and the sixth which includes **"independent collecting vessels for each outlet."** However meritorious a patent may be, elements explicity included in a claim can not be ignored. As was said in American Rolled Gold Leaf Company vs Coe Manufacturing Company 212 F. R. 720, 724 an infringement suit is not a re-issue proceeding. Even under the most liberal rules of construction, I do not think that a waste pipe can be regarded as a "vessel". These claims are not infringed.

Other claims are however, more broadly drawn. In the first, the corresponding element is stated as **"independent means for collecting the constituents passing from each of the outlets of the bottom wall of the container;"** in the third, as **"a collection means in communication with said outlets,"** and in the seventh, **"collecting means arranged below said outlets".**

In these latter claims there is no reference to collection **"vessels".** The broader expression "collecting means" was suggested by the Examiner in his communication of October 15, 1915. The claims which include it are to be read with this difference in mind. In them this element can, I think, fairly be construed, in accordance with the obvious intention of the patent, as means for keeping the water from the two outlets separate so that the amounts can be measured as far as necessary for the purpose of the test. These is nothing in the proceedings in the Patent Office which precludes such a construction. The merits of this case are entirely with the plaintiff; and it is a familiar and established principle that the claims of a meritorious patent are, if possible, to be so construed as to protect the inventor. Eibel Process Company vs Minn. & Ont. Paper Company 261 U. S. 45, 63. In the Gold Leaf Company case above referred to the word "automatically" was used in every claim in suit in connection with a certain operation of the machine. In the defendant's machine this operation was performed by hand. It was held that "automatically" could not be construed to cover manual operation. The principle above stated was fully recognized in that decision.

Let there be a decree that claims one, three, four and seven are each valid and infringed, and for an injunction and accounting; and that the remaining claims are not infringed.

Costs to the plaintiff.

Bermingham & Prosser Co., 128 S. Sangamon Street, Chicago, has been appointed exclusive distributor in the Chicago area for Oxford book papers, made by Oxford Mills, Rumford, Maine.

James Rogers, 76 years old, pioneer paper manufacturer of Northern New York and president of the J. and J. Rogers Pulp and Paper Co., died at his home in Au Sable Forks, N. Y., September 24, 1929, after a brief illness.

Pacific Coast T.A.P.P.I. Convention

Instructive Papers and Large Attendance are Features of First Meeting of Western Division

A MOST constructive program was featured at the first convention of the Pacific Coast Divison of the Technical Association of the Pulp and Paper Industry, held at the Winthrop hotel in Tacoma, Wash., October 5. Although the time was limited, the big schedule of addresses was carried out completely, together with a business meeting and an evening banquet.

J. G. Newbegin, mayor of Tacoma, extended a welcome to the delegates and presented the key of the city to President P. H. Glatfelter of the national association whose visit was greeted with great enthusiam. The mayor spoke of Tacoma as the center of a great pulp and paper development and quite the logical place for the first regular meeting of the Pacific coast group. Frank S. Baker of the **Tacoma News Tribune** was another local speaker to greet the convention, adding his welcome to that of the mayor.

President Glatfelter followed with an address on "The Objectives and Functions of T.A.P.P.I.", and in his talk brought many interesting viewpoints of the national association. He mentioned that since pulp is the main phase of the industry in this region thus far, it might be encouraging for the western pulp men to hear that a standard for measuring the strength of pulp will probably be worked out before very long. Mr. Glatfelter feels that such an official standard made uniform everywhere will be received as a beneficial method for the evaluation of pulp.

Another suggestion which was well received and to which reference was later made by other speakers was that pulp and paper mill operators should give more attention to the mechanical man. While chemists and special engineers have been given prominence in the scientific operation of equipment and in the mill layout and laboratory, the mechanical man must be regarded as a vital factor in keeping things running smoothly and in speeding up production by intelligent attention to the machines.

President Glatfelter also urged the need of some kind of vocational training to prepare young prospects to be the papermakers of the future. He called attention to the five textbooks already existent on pulp and papermaking. The idea of taking these young men into the mills for summer employment to get practical knowledge was suggested.

Research at McGill University

Prof. W. F. Seyer of the University of British Columbia, Vancouver, gave an address on "The Pulp and Paper Research Institute of Canada." This was illustrated with slides of various views of McGill University where the research program is carried on, showing the extensive scope and accomplishment of the work. The slides and the lecture showed clearly what is being included in the research program.

Some of the special problems named by Prof. Seyer as being taken up at McGill University were—pressure, temperature diagram for aqueous solution of sulphurous acid; action of sulphurous acid and bisulphates on cotton and wood pulp; the isolation of lignin by methods not involving any drastic chemical changes in its chemical structure, and other phases of lignin analysis; the structures of cellulose and allied problems, such as hydration, bleaching, etc.; isolation and recognition of nature of the gum, waxes and fats present in spruce and jack pine from the point of view of their bearing on "pitch" trouble, action of bacteria and enzymes on cellulose; structure of the cell-wall; structures are determined by X-ray analysis.

Dr. W. Hirschkind of the Great Western Electro Chemical Co., Pittsburg, Calif., presented a paper in advanced research on "The Chlorine Method of Pulp Production." This was an excellent treatise.

Determining Stack Losses

"The Determination of Stack Losses in Sulphate Mills"

Picture taken at meeting of Pacific Coast Technical Association of the Pulp and Paper Industry, Tacoma, Wash., October 5, 1929

was the address of George H. Horne of the Western Precipitation Co. of Los Angeles. This was supplemented by equipment and charts to demonstrate points and was informational to the smallest detail.

AFTERNOON SESSION

C. M. Baker, engineer of the American Pulp & Paper Association discussed "The Utilization of Pulp and Paper Mill Wastes."

Beater Control

Arthur B. Green, of the Western Waxed Paper Co., Portland, followed with a paper on the subject of "Beater Control."

Mr. Green prefaced his remarks by stating that since beating is evaluated only in terms of marketable quality, it is well to note every element in the process of beating with its effect on bursting strength, folding endurance, sizing effect, shrinkage on dyeing, bulk, freeness and the like, qualities that directly or indirectly describe the paper being made.

Density of the stock can now be governed within an error of 2/10 of one per cent and the adjustments of beater roll can be prescribed so as to result in uniform papermaking. The present instrument referred to by Mr. Green is a rotating body with fins or paddle turning under the stock at fixed speed. Depth of submergence is constant. The form is designed to emphasize the factor of internal friction in mass of pulp rather than skin friction since of the two the greater changes take place in the internal section. Driving this at a constant speed under a fixed submergence, the variations in power used are indicated for driving the rotating bed. Thus the changes taking place in stock as the result of treatment by the beater, are merely measured and recorded.

Any form of drive would serve so long as the speed is constant. For convenience, a fractional horsepower induction motor is used taking its current from the light circuit. The average amount of power used is about that of a 40 watt lamp. A small torsion dynamometer is employed to measure the application of actual power mechanically and from this dynamometer the measurement of the recording chart is multiplied. The result is an extremely sensitive indication of every change in the stock, the gradual changes as well as the momentary changes.

The typical beating curve starts with a broad line and ends with a narrow line, the width equalling the degrees of unevenness in furnish since the thick portion of the stock raises the reading and every thin portion drops it. Every time that the size is added, whether milk or soap, the reading drops. Alum raises the reading. So a record of when ingredients were added and which were right quantities is at hand.

To put a control on the beater, it is necessary to make merely three bolt holes in the side of the tub, mount the instrument, connect it with lighting current and it is ready.

Pulpwood By-products

Prof. F. H. Thurber of Oregon State College, Corvallis, discussed "By-Products of Pulp Woods", stating that they have begun several research problems on cellulose in the school but none of them are far enough along to report on. For this reason he dwelt on some of the more finished work which has been done on cedar oils and a few other by-products of special interest in the region locally.

The first oil worked with was Port Oxford cedar wood oil, the commercial possibilities of which was brought to the attention of the chemical engineering department of the college which assisted the Western White Cedar Lumber company of Marshfield, Oregon in the erection of a plant large enough to produce from 50 to 75 gallons of oil a day. The oil is produced by passing steam through dust obtained from the saws, about 7 per cent of oil being recovered in this way. The oil has a specific gravity less than one and so floats on top of the water whenever the steam is condensed.

Prof. Thurber stated that the value of this oil commercially did not as yet turn out so satisfactorily as at first was hoped.

Another product that has always created a great deal of interest and discussion is lignin. People used to say that its recovery would be of more importance than the coal tar industry has been. They may be correct in their surmise, yet it is certain that the discovery of the properties and uses of lignin make up a more difficult problem than was involved in the working of the main components of coal tar.

Among the many hundreds of attempts which have been made to recover and make use of lignin, one of the most promising is now carried on in the Marathon Mills at Rothchild, Wisconsin, by a Mr. Howard formerly of Seattle. Prof. Thurber stated that he visited this mill during the past year and inspected the process of this recovery of lignin.

Common uses of the product are said to be as a penetrating oil in liniments, a carrier of dyes in leather preparations and perhaps as a base for perfumes. Its chief value is its penetrating qualities. There is a market for it at about 90 cents a pound delivered in New York.

A third oil in which work has been done is Myrtle leaf oil. This also promises to have commercial possibilities. Thymol which usually sells for about $3.00 a pound can be isolated from it.

Prof. Thurber touched upon the great waste noted when passing through sections where lumber companies are at work. In tracts passed through this summer one might estimate roughly that at least 60 per cent of the original stand of timber is not taken out of the woods. Logging camps state that competition is so keen that it is impossible for them to take out small timber and make a profit. It may be they will find it necessary to follow the merger system in order to reduce this competition.

A number of different plans have been tried in attempting to reduce this loss. One plan that has met with some success is to use light logging rigs to bring in the small timber and then make that which is suitable into chips for pulp in the woods, thus reducing the cost of transportation.

The speaker stated that in experimental work in their laboratories on Douglas fir last year they ran an analysis on red and white Douglas fir and found that the two woods gave practically identical analysis although their appearance was entirely different. The white fir is light in color with annular rings quite close together, while red fir is red in color with a coarse grain and with rings far apart.

This year they experimented with a small sulphite digester with the idea that it may be possible to find out something of value relative to the use of this process with Douglas fir.

Prof. Thurber was one who emphasized the need of vocational education for the pulp and paper industry expressing as his opinion that greater progress would result with trained apprentices entering the operating end as well as in other departments.

Newsprint and Ink Penetration

H. Andrews of the Powell River Co., Ltd., Powell River, B. C. gave a comprehensive address on "Newsprint and Ink Penetration."

Fineness of fiber and calendering of newsprint were given as making for better finish and more resistance to ink penetration, both tending to lower porosity. The lower the porosity, the lower the viscosity of the ink it is necessary to use, and from this reasoning it would appear that the ideal would be to produce a finish on the paper with as little pressure as possible, and in this way there would be conserved the fiber surface resistance to ink penetration now lost through the surface calendering, and with the high porosity obtained, an ink of high viscosity could be used, which again means more resistance to ink penetration.

The variables in the manufacture of newsprint affecting the printing quality are groundwood fineness, moisture in paper, calendering and per cent of sulphite. The latter two are fairly well set, and by control of the groundwood fineness and moisture, the paper should be fairly constant. From the standpoint of ink, the properties which come into play are co-efficient of viscosity, fineness and percentage of black carbon pigment.

Temperature was given as a control factor in the viscosity of ink. An increase in the temperature of ink results in a decrease of its viscosity—as the ink is warmed, it becomes thinner and will spread over a correspondingly greater area, thus having the same effect as far as ink penetration is concerned as if more had been used. A change in the tempera-

ture of ink of about 15 deg. Fahr. will result in a change in the viscosity in the ratio of about 2 to 1.

From a study of the printing process of newsprint, it seems logical that the temperature control should be applied to the ink as it is applied to the paper and the oil of the ink as and after it is drawn into the paper. In a test it was found that friction heat caused from the release of ink to the type in the course of about two hours running, rises about 12 deg. Fahr. which increased the spreading power of the oil some 40 per cent according to the viscosity tables, but during the test there was not noticed any increase in penetration, and as the paper did not appear to have any excess capacity for oil, it was concluded that the paper which had remained uniform in temperature had kept the oil of the ink at a fairly consistent temperature, reasonable when the small amount of ink in comparison to the bulk of paper is considered.

It appears, therefore, said Mr. Andrews, that the temperature of the paper is a control factor in the maintenance of uniform viscosity of the oil of the ink at the vital spot for ink penetration. Then, the ideal condition necessary for a uniform quality of print in this respect would be to have the paper at the time of printing, and for a period afterwards, at a uniform temperature. This temperature should be the maximum it will encounter. Ink, then, should be selected of as high a viscosity as possible, one which will just print the paper without smudging.

J. L. Culbertson of Washington State College, Pullman, who was to speak on "Pulp from Cornstalks and Straw" was unable to be present, much to the regret of the program committee.

E. P. Cameron told of the progress made at the Forest Products Laboratory at Montreal. His topic was "Research and the Pulp and Paper Industry in Eastern Canada."

Prof. W. L. Beuschlein's talk was on "The Effect of Varying Concentration of Sodium Sulphide for Sulphate Pulp."

Kenneth Sibley of the California Filter Co., Seattle, gave a most interesting paper on the subject "Pulp Mill Water Sulphate Pulp." Immediately following this report will be found the complete text of Mr. Sibley's paper.

Election of Officers and Banquet

R. S. Wertheimer of the Longview Fibre Co., Longview, Wash., was elected chairman of the Pacific Coast Association of the T.A.P.P.I. at the close of the convention. R. Reed of St. Helens was chosen vice chairman and B. K. Benson of the University of Washington was re-elected secretary.

The nominating committee consisted of M. W. Black, L. R. Wood and A. H. Hooker, Jr.

Other matters of brief business were discussed at this session, and Longview was chosen as the next convention city. The meeting will probably be held in the spring.

A banquet was held in the evening honoring President and Mrs. Glatfelter. At this time, C. M. Baker delivered the address of the evening on "Remedial Measures for the Control of Stream Pollution."

Pulp Mill Water Supplies[1]

By KENNETH SHIBLEY
California Filter Co., Seattle, Washington

"WATER", said an old hand in the pulp mill business, "may be characterized as a belt which conveys the product through the mill." This remark may be taken almost as literally true, for from the time the wood or other material from which the pulp is made starts on its way to being converted into the finished product, it is floated in water. The mill water supply, therefore, becomes a matter of prime importance. It should be abundant, soft, free from suspended matter and low in color and iron or other dissolved salts that might in any way interfere with the manufacturing process involved.

Hard water, seldom found here, is objectionable on two general grounds. First, it should not be used in the boiler and, second, it is unsuitable for use in the actual manufacture of pulp and paper. If hard water is used in the beaters, an excessive amount of alum must be added to work the hardness because no size will be precipitated by the alum until all hardness is removed from the water.

Variations of hardness from day to day impart an uncertainty to the whole sizing process. Hard water is not desirable for washing any kind of pulp.

Hardness in boiler feed water is the direct cause of scale, leaky flues, and many of the other troubles incident to large scale steam production. It reduces boiler life and efficiency, increases repair expenses, causes frequent shutdowns and sometimes fuel wastage. If the boiler well supply is hard, it should be treated outside of the boiler and not in it. Never make a sewer of your boiler. Softening reaction brought about in the boiler by using certain compounds under the high temperature encountered, may be dangerous and costly. Boiler feed well treatment should be placed in the hands of an expert and not left to chance. Many of our well supplies here need little or no treatment and it is the speaker's opinion that many boiler plants using certain types of treatment would be better off without them. Fortunately for the pulp and paper manufacturer of the Pacific Northwest, nearly all of the water supply used is relatively devoid or free from iron and low in sewage pollution.

With perhaps one or two exceptions, all mills derive their supplies from either rivers or lakes. Both lake and river water may carry some dissolved color, considerable vegetable matter, and at times a heavy load of mud or glacial silt.

Generally speaking, supplies are available in sufficient quantity from normal storage or stream flow, but in one or two cases at least along the short rivers of the coastal plain, adequate storage is provided against the period of light rainfall during July, August and September.

The quantity of water required will vary greatly with the kind of pulp and paper being made; likewise, with the extent to which white water may be returned to the circuit. Undoubtedly, the use of white water for showers and other purposes can be considerably extended over what is now the practice in many mills. Adequate white water tankage at strategic points in the circuit is most valuable and cuts down appreciably the amount of fresh make up water that is required.

In cases where water supplies are limited, the refiltration of process water is being given considerable attention in the design of new filter plants. Such water, if properly coagulated, settled and filtered, is just as good as the original supply.

Approximate Quantities of Water Required

Approximately the quantities of water required per ton of wood pulp produced are:

For groundwood	35,000	to	50,000	gallons
" unbleached sulphite..	70,000	"	110,000	"
" bleached sulphite...	110,000	"	150,000	"
" soda	100,000	"	140,000	"
" Kraft	60,000	"	110,000	"

The lower figures represent minimum amounts while the upper ones represent maximum amounts necessary. Wood preparation, liquor making, fibre preparation, bleaching, machine process, fresh water showers, steam, and power and miscellaneous uses are included in the above.

The fresh water requirements for conversion from pulp to paper is about 20,000 to 25,000 gallons per ton.

Generally speaking, the water supply for a mill is underestimated rather than over-estimated. The speaker has yet to see the mill which has a water supply too large for its need. This may be due to a too conservative estimate of requirements for normal rated mill capacity or to the increase in output over rated capacity.

If a mill rated at 100 tons per day capacity has a water of say ten million gallons and it is found possible to boost the mill output to 140 or 145 tons, the water consumption is increased proportionately. In those mills where water filter its water supply. Adequate filtration has a very definite their capacity is frequently barely adequate for the amount of water required for the original rate of tonnage output. With increased production, water use almost invariably in-

[1]Paper read at meeting of the Pacific Coast Division of T.A.P.P.I., held at Tacoma, Wash., Oct. 5, 1929.

creases, thereby overloading the filters, and when filters are operated at high rates—in many cases 200 per cent—poor water and damage to the beds usually result.

Some Advantages of Filtration

Filtration is the most common method used in the treatment of water; it will remove suspended matter and color due to iron or organic matter. Practically every mill should filter its water supply. Adequate filtration has a very definite value in dollars and cents. If a water supply is clear and colorless and other things being equal, the pulp products will be of better color, greater strength, and higher value than if the water were full of mud, color or vegetable matter.

Filtration will save machine wires by keeping out foreign matter that may cause them to break, due to stoppage and lump formation in these wires. It will prolong the life of felts by keeping out the tiny sharp particles of sand that tend to abrade and break down the whole fiber of the felt, causing tears and breaks. But the greatest value of all is the effect on the pulp test, particularly bleached sulphite. The very nature of the wood fibers in the pulp are such that they absorb color and suspended matter from the water. They form a perfect filter mat, and if the water used in washing contains undesirable elements, these are almost sure to remain in the pulp, causing specks.

Filtered water is uniform and pulp made with it is usually of uniform color. No matter what the tint desired, it should be uniform throughout. This is particularly true on papers for coloring or cutting.

Strength is vitally affected by muddy water, the mud acting as a filter. The case in point may be illustrated. Light weight, unbleached kraft showed a loss of almost 50 per cent in strength due to muddy water alone. In this case, the color produced by the mud was not objectionable, but the loss in strength was serious. A filtered water supply would have prevented this.

Some waters contain molds and bacteria which are causes of slim troubles. Adequate filtration of the water supply will go a long way in correcting this.

Generally speaking, the filter plants should be constructed as a unit apart from the rest of the mill. To do so, usually results in lower construction cost and in a design better suited to the needs of the problem at hand. If filtration is necessary at all, full provision should be made for proper dosage of the raw water through mixing, ample coagulation, adequate settling, and properly constructed routes of filtration through careful designed sand beds of correct depth and composition. It may be possible that for a considerable portion of the year, full chemical treatment of the water may not be required, but when bad weather does appear, all plant facilities necessary are at hand, and instead of having to battle bad weather, the mill operation continues with a good, clean supply of first class quality. Any attempt to "short cut" the filter plant by eliminating or curtailing any of these necessary elements, usually results in trouble.

The process of water filtration includes all of these elements mentioned. Anything short of these results is a mere mechanical straining of the water and except in rather rare cases is unsatisfactory.

Problems Different in Each Mill

Since no two water supplies are alike, it follows that their methods of treatment are not identical. Many supplies, however, are so closely similar that in general the process of treatment may be said to be the same. Nor does it follow that one type of treatment is adequate for similar supplies. Each should be carefully investigated as to its turbidite, color and value throughout the full year or cycle if possible. Chemical equipment should be provided to meet the changing conditions; settling basins should be ample for peak demands during bad weather periods; filter beds should be of sufficient area to assure reasonable rates of filtration even under peak demands. Ample storage of filtered water should be provided between the filterers and the mill supply pumps. The practice of storing wash water in a tank adjacent to the filterers rather than to pump it directly from the well, is distinctly advantageous.

Filter operators should be intelligent men carefully instructed in their duties and cognizant of the importance of the work over which they have charge. These are but a few of the considerations that should govern the design and process of the well conceived filter plant.

The cost of producing clear filtered water is surprisingly small. First, the cost of filters will range from about $3,000 to $8,000 every million gallons capacity depending on type and condition of installation. The cost of producing filtered water excessive of power for pumping will rarely exceed, on the average, $2 per million gallons. For bleached sulphite pulp where the use is say 125,000 gallons per ton, the water precipitation cost per ton is not over 25 cents, surely a small item.

It has even seemed that the quality of a mill water supply furnished has been a matter of secondary importance. Perhaps this was not intentionally so, but judging from the number of what might be termed fair-weather water supplies, it seems to be a fact. As long as things run along fairly well, the question of the condition or quality is not a live one, but let the water supply run low, get muddy or get full of moss or otherwise be troublesome, then the subject is of important interest to everyone concerned. While it is true that the pulp and paper industry is principally engaged in that business and not in the water business, yet the way the proper water affects the success of the venture impels belief that a more comprehensive consideration of these facts of the problem would be advantageous. These are not intended as words of criticism, but to indicate one of the many considerations that effect the mill owner and operator, for unlike many of the problems of operation, the water problem if properly evaluated and solved at the beginning is permanently solved.

Master Printers' Federation Issues Statement

The Executive Council of the Master Printers' Federation of Chicago, Inc., has sent out a statement explaining the association's reasons for handling waste paper, which is as follows:

A Statement of Facts

A Waste Paper Bureau was established by the Master Printers' Federation of Chicago in September, 1926, because of unfair tactics adopted by some of the Chicago waste paper dealers.

This condition was brought to light by complaints received from members and verified by a survey made in the summer of 1926.

The Master Printers' Federation is an independent local association whose sole object is to improve conditions for printers in the metropolitan area of Chicago. We are not affiliated with any National Association and have no interests outside of Illinois.

Our principal activities consist of promoting, installing and supervising Cost Finding Systems in the plants of members; in supplying credit and collection information; in gathering, compiling and disseminating statistics on costs and production as they exist in connection with the various operations involved in producing printing in Chicago.

We have handled waste paper collectively through our Bureau continuously since September, 1926, in order to protect our members in the matter of prices which are based on the mill market prices paid to dealers.

To avoid continuous trouble regarding service and price fluctuations the Building Managers Association of Chicago recently requested us to handle the waste paper accumulation of some of their members. This arrangement was made as a protective measure for building managers.

We have no intention or desire to extend our activities as far as waste paper is concerned to points outside of Chicago and all we are interested in is to secure fair and reasonable prices for the various grades of waste paper accumulated by our members.

At the present time our waste paper is handled through two local dealers, namely, the General Fiber Company and the Ajax Waste Paper Company.

There is no secret regarding the manner in which waste paper is handled through the Waste Paper Bureau of our organization and anyone interested in obtaining additional details may do so by communicating with the Secretary.

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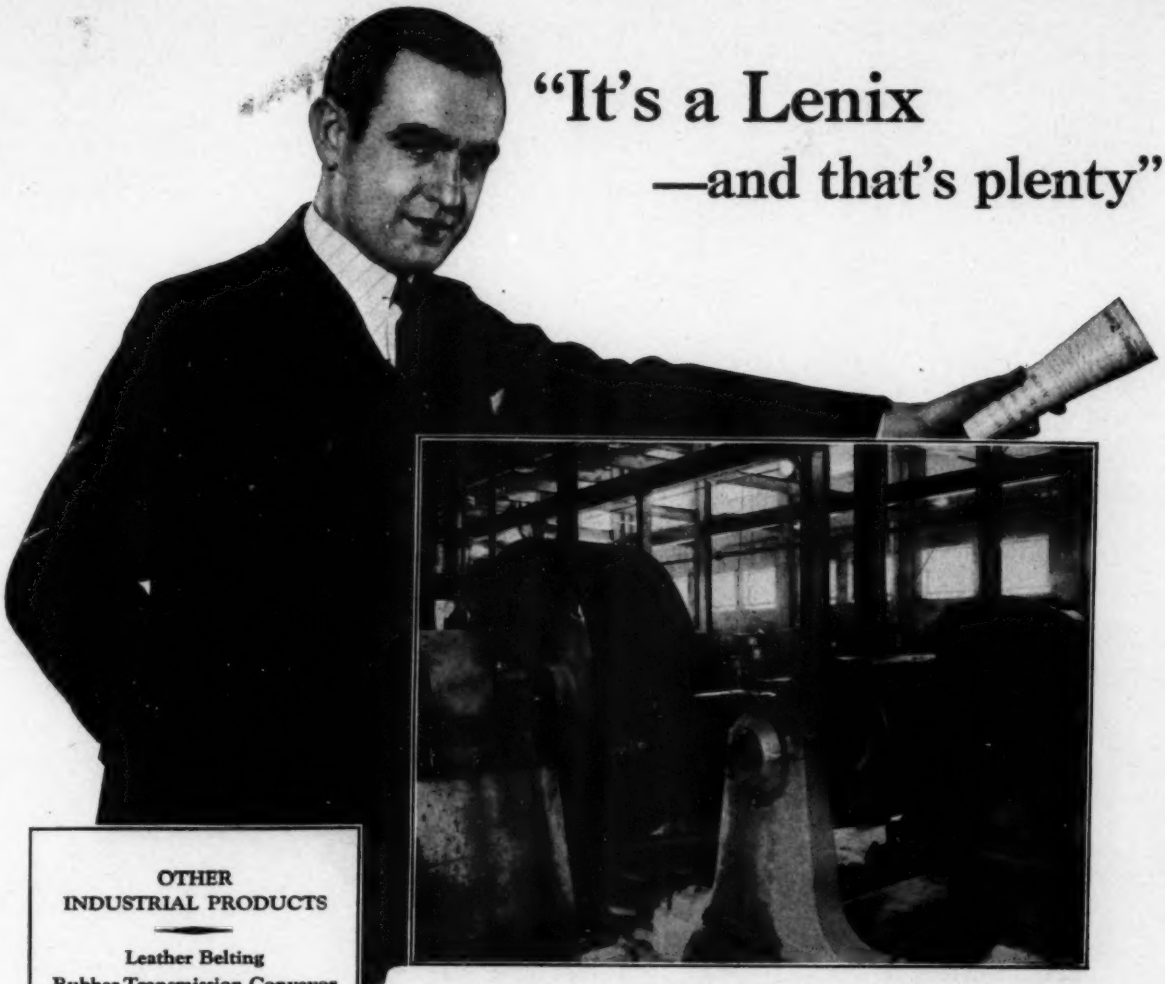

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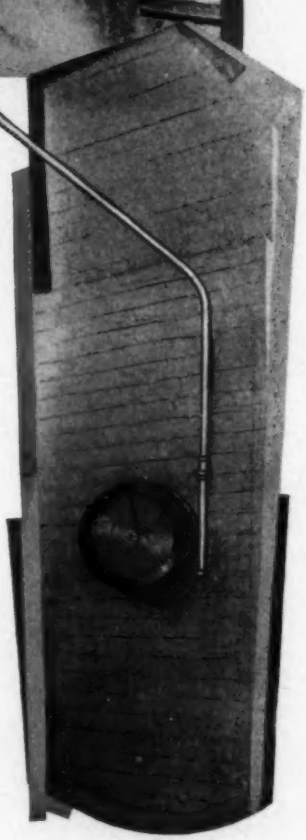

Checking Steam Demand in Paper Mills

MODERN paper mill accounting must keep accurate check of steam cost. This knowledge is useful from an operating as well as cost standpoint. The West Virginia Pulp and Paper Company use eight Brown Electric Flow Meters to record the steam demand by the various departments. The meter shown above in the photograph is used to record steam consumed in making caustic liquor. The Brown Automatic Recording Planimeter—an exclusive Brown Flow Meter feature—is highly valued at this mill because it records the actual volume units of steam flow.

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The Month at Washington

CONGRESS and the Tariff—The Senate is smashing away at the Tariff Bill as enacted by the House and hopes to have it in shape sometime this month. In considering the House Bill the Senate has so far accepted par. 318, a clause inserted in the Metal Schedule (3), providing for wire cloth used in papermaking machines, now dutiable by court decision in par. 372 of the existing tariff act of 1922, as parts of machines, carrying a duty of 25 per cent ad valorem when the wire is of mesh not finer than thirty wires to the lineal inch; 40 per cent if finer than thirty and not finer than ninety wires to the lineal inch. Fourdrinier wires and cylinder wires and woven-wire cloth suitable for use in the manufacture of wires carry a duty of 55 per cent ad valorem.

The principal changes so far in Schedule 14 (papers and books) of the House bill are in the nature of clarifying clauses, being amendments aimed toward clearer classifications to lessen litigation, and a harmonizing of terms, weights, and thicknesses. Approximately seven increases in rates are shown and about the same number of decreases in rates are made in the House bill, without any changes at all in pars. 1401, 1407, 1411 and 1412.

In par. 1402, which provides for nonprocessed paperboard, wallboard, and pulpboard, including cardboard and leatherboard or compress leather, the Senate has rephrased the processing terms employed with a view to eliminating ambiguities, but no change is made in the rates in this paragraph. The terms "plate finished, supercalendered or friction calendered" are substituted for "glazed". The term "glazed" in this paragraph is used in a descriptive rather than a commercial sense. Administrative officials have been unable to determine the exact degree of gloss which is intended by the term "glazed". The terms "plate finished, supercalendered or friction calendered" are used to indicate a gloss produced by a secondary process. These processes, generally speaking, are obtained by passing paper or board over one or a series of rolls sometimes of different materials, with or without heat, under pressure, hence the change.

The words "laminated by means of an adhesive substance" are substituted for "laminated or pasted" in the House Bill, to indicate a board produced as a secondary process by combining two or more layers with the employment of an adhesive substance.

Coated board is now held for tariff purposes to be a board the surface of which is coated with a layer of some substance. Board to the surface of which stain or dye has been applied in the same manner as a coating, is now classified for duty as an uncoated board because the stain or dye is absorbed and there is no apparent coating on the surface of the board. The term "surface stained or dyed" is therefore used to indicate a board to which stain or dye has been applied to the surface.

Since vat-lined board competes with lined board, the term "lined or vat-lined" is used to indicate a board which has been lined by means of pasting or which has been produced in the form of a layer of pulp at the time of manufacture in one process.

The rate on manufactures of pulp in par. 1403 is increased from 25 per cent to 30 per cent to correspond to the rate on paper not specially provided for in par. 1409. Since paper is a manufacture of pulp, and in a case where an article manufactured of pulp and similar to paper, though not known as paper, is imported, the same rate of duty will, therefore, apply whether or not the article be classified as pulp or of paper.

The chief change made in par. 1404 is the inclusion in the bracket crepe paper of a provision for paper wadding, pulp wadding, and manufactures of such wadding. The wadding referred to consists of a number of thin, soft, highly absorbent layers, and is used for candy-box padding, surgical and sanitary purposes, and similar uses. Much customs litigation has occurred in the matter of its classification, and by the specific mention of wadding the intent of Congress is thus made clear.

The term "white or printed", as applied to lightweight paper is restored, the inclusion of this term being to insure tissue papers printed taking a duty provided for lightweight papers rather than a lower duty in some other paragraph.

The Senate has also restored the language and rates of the existing tariff act (Act of 1922) in par. 1405 on photographic paper for sensitizing and sensitized photographic paper. The House bill had provided separate brackets for basic blueprint and brownprint paper and sensitized blueprint and brownprint paper, and materially reduced the rate on basic photographic paper.

Under the present law, the packing for lithographed goods is not dutiable, and so the Senate added a proviso making dutiable envelopes for mailing lithographic greeting cards and other similar commodities in par. 1408, adding the words "envelopes, filled or unfilled, whether contents are dutiable or free."

Recent Customs Decisions—Sample wall papers, bound in book form, were held dutiable at 35 per cent ad valorem under par. 1313 of the tariff act of 1922, as manufactures of paper, not specially provided for, rather than at the rate of 25 per centum ad valorem under par. 1310 as books, or at 15 per cent under the same paragraph as books of bona fide foreign authorship, because the court says the articles in question are clearly not the kind of books contemplated by par. 1310, and so the U. S. Court of Customs Appeals in a ruling just handed down overrules the protest of the importer (T.D.-43495).

Surface decorated paper, classified at 4½¢ per pound and 17 per cent ad valorem under par. 1305, tariff act of 1922, was claimed dutiable at only 4½¢ per pound under the same paragraph, and the Customs Court in a recent decision (No. 339959-G) upheld this contention of the Keller Dorian Paper Company.

Imitation parchment paper manufactures, or articles made by pasting strips of imitation parchment paper to form tubes, classified at 5¢ per pound and 20 per cent ad valorem under par. 1305, tariff act of 1922, were claimed entitled to free entry under par. 1635, but the Customs Court overruled this protest (No. 250121-G-75470).

So-called "wrapper heads", composed of unlaminated pulpboard cut into octagonal shape, and used exclusively for wrapping rolls of newsprint paper to protect the ends from damage in handling, classified at 30 per cent ad valorem under par. 1313, were claimed subject to countervailing duty of 25 per cent under par. 1303 as manufactures of pulp, but the Customs Court held that the articles in question were held properly classified under par. 1313 (No. 159592-G).

Pan American Trade-Marks—Pan American Bureaus were recently opened for the registration of trade-marks, the requirements fixed by the Pan American trade-mark convention having been fulfilled recently by the interested countries, and registration bureaus for the northern and southern groups have been established at Havana, Cuba and Rio de Janeiro, Brazil, respectively. American trade-mark applications will be received at the Havana bureau which is now ready for business. Applications for international registration at the Havana bureau are made through the United States Patent Office, and applicants are required to pay $50 in addition to the individual fees charged by each member country. The

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U. S. Patent Office charges a fee of $5 for making title search and preparing the official application forms, including transmittal of the certificate to the Havana bureau. Applicants for international registration may select any of the countries which are members of the 1923 convention in which to register their mark. Greater economy, of course, is effected where registration is sought in all countries of the union, for the Havana Bureau fee is $50, whether one or more countries are chosen. The period during which protection is granted for trade-marks registered through the international bureau is the same as that accorded by the laws of the particular country. Renewal of registration may be had at the expiration of each period upon fulfillment of the provisions of the trade-mark convention, and require the payment of $50 to the Inter-American Bureau, in addition to renewal fees charged by individual countries.

The question might arise as to what advantages are to be gained from registering through the international bureau. It is true that the government fees in each country are charged in the case of international registration the same as in the case of a direct registration in the countries, in addition to $50 charged by the Havana bureau and the $5 charged by the U. S. Patent Office for transmittal of the certificate. However, certain economies are affected by international registration through the elimination of the necessity of legalization of documents for each country. American trade-mark owners should confer with their attorneys as to economies and advantages of international registration in any particular case. One advantage that would seem to come from international registration is the priority that is thereby effected. By the terms of article II of the trade-mark convention, it is provided that the date of filing in the country where first application is made for registration or deposit through the inter-American bureau, in the absence of other proof of ownership of a mark, shall determine priority for the registration or deposit of such mark in any of the signatory states. It can be readily observed that in a particularly urgent case application could be filed in the U. S. Patent Office with greater dispatch than it could be filed in a distant country.

Recent Postal Rulings—A new policy to safeguard the postal service against losses incurred in the delivery of registered mails has been adopted by the post-office department. Registered mail is to be delivered in conformity with present policy, but a new procedure is to be followed by postmasters in cases of parcels of extraordinary value, and they are to be handled under special instructions. Valuable parcels, particularly those containing money and pay rolls, are to be delivered at post offices instead of being delivered by a postal employee, under armed guard.

The post office department is now studying the reply card design system on business cards and envelopes, because the present service is declared to be unpopular with mailers and may be eliminated. Examination of the revenues and expenses incurred under the 1928 postal rate law has convinced postal officials that the use of reply cards and reply envelopes is growing less in popularity than had been anticipated by the sponsors of this new postal facility. Some of the larger users of the mails have conducted tests with reply cards and envelopes, with the result that they have lost money and therefore are going back to the 2¢ postage stamp to get new business. It is claimed that as a result of tests the percentage of replies received by the use of the 2¢ postage stamp was considerably greater than that attained through the use of the business reply cards and envelopes.

Various constructive suggestions for the improvement in the design of the business reply cards and envelopes, in order to facilitate their handling and inject more pulling power into them as business builders, have been received, and are now being considered by the department in drafting proposed new legislation for congress. Postal officials thus hope to make them more useful in soliciting new business through the mails. For the postal authorities these special business cards and envelopes also entail more work in handling than letter mail and in computing operating expenses show an increased cost of handling.

Compensation for Occupational Diseases—Compensation awards for occupational diseases are allowed in only 14 out of the 48 states which have workmen's compensation laws, according to a survey just completed by the Department of Labor. In some cases the law provides for general coverage of occupational diseases while in others only specific diseases are compensated for. A summary of the survey may be had by applying to the department.

Women In Industry—Comprehensive surveys of hours, wages and general conditions relating to women workers in industry are being undertaken by the Women's Bureau. The bureau is charged with the function of formulating standards and policies for wage-earning women, to promote their welfare, to increase their efficiency, to improve their working conditions, and to advance their employment opportunities, and this survey is considered as a necessary function of the bureau. When completed the result will be published in pamphlet form.

Income Tax Rulings—A contribution to a benefit fund for sick employees was held deductible from gross income for the year in which incurred, and deductible as an ordinary and necessary business expense of carrying on a business, in a recent decision of the U. S. Board of Tax Appeal, No. 17097-17099, in re Lemuel Scarbrough).

Where a company created two trusts for the payment of pensions to former employees and officers, the board held that the net income of the trusts was not taxable to the company and that the securities and cash contributed to the funds held in trust were deductible from gross income as an ordinary and necessary business expense (No. 19522). It was also held in this case that where an inventory of goods in process and finished goods on hand at the close of a taxable year is taken at cost, it should include the amount of bonuses paid to employees who participated in the production of the goods composing the inventory.

Radio Advertising Increases—An increase of 94.3 per cent in radio broadcast advertising in the first seven months of 1929 over the corresponding period in 1928 is shown in statistics just made available by the Census Bureau. The figures include only the Columbia and National broadcasting networks, however, and cover charges for use of facilities only, talent being excluded. National advertising in newspapers gained 18.8 per cent.

Federal Trade Rulings—The use of the stipulation agreement to end unfair trade practice has been increasing steadily since this procedure was instituted four years ago, says the Federal Trade Commission. By the terms of the stipulation agreement a concern agrees to cease the use of a practice that is considered by the commission to be an unfair method of competition, carrying with it an admission that the unfair practice has been used by the concern, in the event the signer violates his agreement, and the facts admitted may be used as evidence by the commission before a court of appeals called upon to support the commission's order to cease and desist.

There are important advantages to the stipulation method of stopping an unfair trade practice, since if such an agreement is reached, the concern in question is spared unfavorable publicity. For the benefit of the trade, however, the commission makes public the fact that an agreement has been signed covering particular subject matter and briefly characterizing the practice which has been abandoned. The name of the signer is never disclosed in these announcements however. The method also saves time and expense all around incident to court action which would otherwise be necessary.

The Trade Commission has also just begun an intensive campaign against all false and misleading advertising. Heretofore the commission has only acted when cases were brought to its attention, but now it is undertaking action on its own initiative. A special board of review has now been set up in the commission to investigate suspected violations which the commission itself has noticed, and members of the staff are now scrutinizing large numbers of newspapers and magazines to note advertising that on its face appears fraudulent. Many publications are responding to the campaign by agreeing voluntarily to refuse to print misleading advertising. Where they do not the commission is enjoining their printing such advertisements as aids to those who are misrepresenting their goods.

Where Records Were Made—And Broken

THE 304 and 264 inch Bagley and Sewall Timken-equipped paper machines at the Great Lakes Paper Co., Ltd., at Ft. William, Ontario, have made—and broken—some remarkable records. Their performance has furnished valuable and convincing data on the actual effect of Timken Bearings on paper machine operation.

When the 304 inch machine, the largest ever built, was started for the first time it required only 45 HP to turn the dryer section over, without clothing. This is quite a contrast to the usual custom of tying in the breakers when starting a new machine.

Early in its career the 264 inch machine broke all production records by making 151 tons of paper in 24 hours. It has also furnished interesting power readings as compared with those taken on a plain bearing machine of the same size. Its breakout demand was 80 KW as against 328 KW. Its average demand during acceleration was 234 KW at 200 volts as against 306 KW at 219 volts, or a saving of 20%. And the integrated power demand saving is in the neighborhood of 20% also.

Such are the benefits arising from Timken tapered construction, Timken *POSITIVELY ALIGNED ROLLS*, and Timken steel.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

Wholesale Prices—A slight reaction from the recent upward trend of wholesale prices is shown for September by information collected in leading markets of the country by the Bureau of Labor Statistics, showing a decrease of ½ of 1 per cent in the general price level. With 1926 as the basis of 100, we find the following changes for paper and pulp:

Sept. 1928	Aug. 1929	Sept. 1929	Purchasing power of the dollar September, 1929
88.8	88.2	88.2	113.4

Employment and Payrolls—Employment increased 1.1 per cent in September as compared with August, while pay rolls increased 3.9 per cent generally, says the Department of Labor in some figures just released. With 1926 as the average monthly basis of 100, we find the following changes:

	Employment			Pay-Roll Totals		
	1928	1929		1928	1929	
Paper and pulp	94.4	95.4	96.0	94.0	95.7	98.7
Paper boxes	90.7	94.2	95.1	95.5	100.0	100.7
Paper and printing	98.2	100.6	101.1	99.3	103.1	104.4

Tariffs in Certain Foreign Countries—This is the title of Senate Document No. 24, 71st Congress, 1st Session, just published by the Government Printing Office, showing tariff increases in foreign countries, methods of valuation for ad valorem duties, and duties levied in foreign countries on commodities from the United States, which pamphlet offers some interesting facts and figures for those who are now intensely following the enactment of a new Tariff law.

Manufacturing Problems—A more intimate contact among the industrial interests of the country to facilitate the solution of common manufacturing problems in communities, is the object of a study just launched by the U. S. Chamber of Commerce.

Industrial Traffic Management—The findings in the industrial traffic management survey are now being summarized for publication by the Department of Commerce. It is believed that the results of this survey will be of interest and value to every firm with traffic management problems, and now is the time to place an order for your copy. The bulletin, when printed, will be furnished at a nominal figure but the cost has not yet been determined.

Paper Notes of Interest—The operations of the Cornstalk Products Company of Danville, Ill., which produces pulp from cornstalks for papermaking, will be resumed shortly with a daily production of 60 tons, the plant having been shut down for machinery changes, and formerly produced only 10 tons of pulp daily.

A conference designed to develop commercial standards for quality of record and printing paper was held October 2d by representatives of producers, distributors and users under the auspices of the Bureau of Standards. It is planned to establish standards of quality on a service and performance basis particularly.

Establishment of a new policy in authorizing postmasters to sell to the highest bidder undeliverable magazines and other periodicals as waste materials has just been approved by the Postmaster General.

Experiments have proved that certain types of highly purified wood fibers, now commercially obtainable, are suitable for conversion into high grade bond and permanent record papers, says the Bureau of Standards. Such papers have hitherto been made only from the best grade of rag fibers which are considerably more expensive.

Steps are being taken in Italy to affect the standardization of paper weights and measures, questionnaires having been sent to all paper manufacturers in the country, also editorial and printing industries, with a view to organizing the supply of raw materials, unifying sales methods and increasing paper consumption, also affecting a definite program for paper standardization.

The L. L. Brown Paper Company of Adams, Mass., has issued a new catalog of its lines. A distinctive feature is the fact that it indicates not only the stock items, but also gives the actual percentage of rag of which each L. L. Brown paper is made. In addition it also states the kind of rags used in the manufacture of each of the company's products. This is said to be the first instance of a paper mill revealing such information about all its lines.

NEW YORK CITY

Luzerne Mill Reopened

The Luzerne Paper Company's mill at Hadley, N. Y., has resumed operations under the direction of receivers, following its closing last month when a petition in bankruptcy was filed against the company. No definite information is available as to the length of time the plant will be operated under the receivership, but the mill is exceptionally well stocked with raw material and it is believed that the market is sufficiently strong at present to bring immediate returns, thus enabling the mill to operate continuously.

The Luzerne mill when running to capacity employs about 100 men, and is the only entirely local plant in the two towns of Hadley and Luzerne. It had been closed since the institution of bankruptcy proceedings.

The Howland Bag and Paper Co., manufacturer of paper and paper bags of Dexter, N. Y., has announced the appointment of Julius Gold as its exclusive sales representative in the metropolitan territory. The New York office of the company is located at 55 West Forty-second street. The company manufactures square, flat and automatic bags.

The Cosmopolitan Paper & Twine Association, Inc., whose membership includes many jobbers of paper and twine in the metropolitan district, has adopted a code of business ethics, according to announcement, consisting of twelve rules following closely those adopted at trade practice conferences held under the auspices of the Federal Trade Commission and which will be applied to the business transactions of members of the Association henceforth.

The Muller Paper Goods Company, Inc., of Queens Borough, manufacturer of paper products, has filed notice of an increase in capital from $10,000 to $200,000 to provide for contemplated expansion.

Forty Years in Paper Trade

Joseph L. Seiler, vice president and director of sales of the Warren Manufacturing Company and widely and popularly known among paper men, has just observed the fortieth anniversary of his entrance into the paper trade.

In September, 1889, Mr. Seiler went to work for the Warren Company in the small mill office in Riegelsville, N. J. His first duties were mostly concerned with office detail, but becoming interested in the sale of the mill's products and given the opportunity by John S. Riegel, then the general manager of the company, he soon became actively engaged in the sale and distribution of "Riegel's papers." He was made secretary of the corporation in 1909, became a director in 1914, and was elected vice president in 1921. Mr. Seiler's acknowledged judgment and foresight, together with his initiative in pushing the sale of the company's papers, have been important factors in the upbuilding of the Warren business. He was the recipient of numerous congratulations on his fortieth anniversary in the paper industry.

A petition in bankruptcy was filed September 19 against Salomon Bros. & Co., one of the oldest and best known concerns dealing in papermakers' supplies with offices at 200 Fifth Avenue, New York, and against Albert Salomon individually, by the Interstate Trust Co., creditor for $2,119; S. Birkenstein & Sons, Inc., $2,087, and Paul Foster, $9. Liabilities are placed at about $70,000, and assets at about $55,000 including claims against the German Republic adjudicated by the Mixed Claims Commission which amount to $40,000. The Irving Trust Company has been appointed receiver.

The Ideal Card & Paper Co. has moved to 151 West Twenty-fifth street, New York, where much larger quarters are occupied and where a complete stock of printing papers is carried.

$500
FOR A SLOGAN
(19 Cash Prizes)

Write a Slogan about Nordstrom Valves

The manufacturers of Nordstrom Valves seek a new slogan pertaining to these valves...a slogan that will suggest the service or function, features or advantages...or some easily remembered phrase that will identify the excellence of Nordstrom Valve service. ¶ The slogan..."**Won't leak...Won't Stick**"...is now used, but there are so many outstanding features of Nordstrom Valves with which you are familiar that surely you can think of several good slogans. Your plant engineer may have some suggestions to offer too! ¶ If desired we will send a catalogue describing the various features of Nordstrom Valves which may give you a clue to a master slogan. ¶ You have 19 good chances to win a cash prize. "Think up" a slogan now. Send it in. Send us more slogans as they occur to you. But start now!

CASH AWARDS

First Prize . .	$250.00
Second Prize . .	100.00
Third Prize . .	50.00
4 Prizes, each . .	10.00
12 Prizes, each . .	5.00
TOTAL 19 CASH PRIZES	$500.00

RULES of Slogan Contest

...Anyone is eligible except employees of Merco Nordstrom Valve Co. or affiliated companies.

Slogan must not exceed 10 words. Any number of slogans may be submitted by same person. Use coupon below or separate sheet of paper. Contest closes December 31, 1929.

JUDGES

The judges will consist of one official of the Merco Nordstrom Valve Company, one representative of a well known trade publication organization and one advertising counsellor.

In the event of a tie for any of the prizes offered, each winner of the respective award will receive the same cash amount.

FILL IN THIS ENTRY BLANK AND MAIL

MERCO NORDSTROM VALVE CO.,
343 Sansome St., San Francisco, Calif.

I submit the following slogan(s) pertaining to Nordstrom Valves:

_____

_____

_____

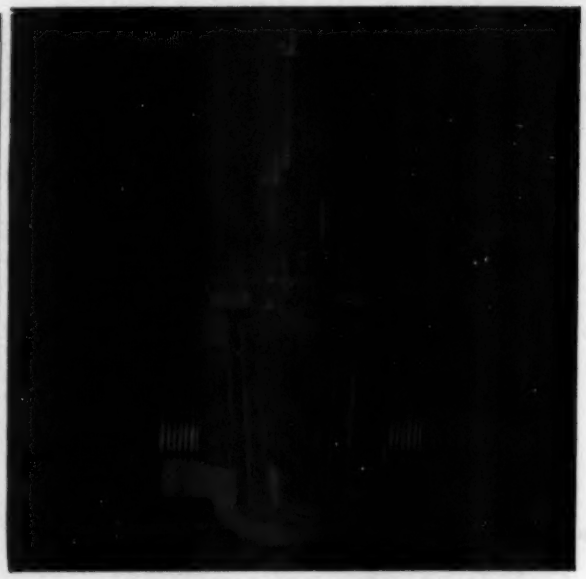
_____

Name_____

Address_____

City_____ State_____

(Use separate sheet if several slogans are submitted)



These Valves Won't Leak - Won't Stick
Lubricated

NORDSTROM VALVES are of the plug cock type, with lubrication and lifting features that make them easy and sure of operation. A stick of special "Merco" Lubricant is inserted under the lubricant screw. The latter, when turned, forces the lubricant down and around the plug. Fluid or other material within the line cannot pass around the plug and leak out, or lodge in the seat. The plug is always easy to turn. Made in types and sizes to meet conditions in all industries.

NORDSTROM VALVES

MERCO

- 2, 3 and 4-way types.
- For high or low pressures.
- For high or low temperatures.
- Special lubricant for special conditions.
- Sizes ½" to 30"
- Ask for Catalog.

Merco Nordstrom Valve Co.

SUBSIDIARY OF THE MERRILL COMPANY

Engineers - Manufacturers

Atlanta: Healey Bldg.
Boston: 184 Boylston St.
Buffalo: Genesee Bldg.
Chicago: 176 W. Adams St.
Dallas: Magnolia Bldg.
Detroit: 2542 W. Grand Blvd.
El Paso: 111 S. Virginia St.
Houston: Petroleum Bldg.
Los Angeles: 556 S. San Pedro St.
New Orleans: Masonic Temple Bldg.
New York: 11 W. 42nd St.
Pittsburgh: Clark Bldg.
Portland: Buyers Bldg.
San Francisco: 343 Sansome St.

AGENCIES IN PRINCIPAL CITIES

Factories—Oakland, California; and Belleville, New Jersey
Canadian Manufacturers—
Peacock Bros., Ltd., Montreal, Cobalt, Winnipeg, Vancouver
England—Audley Engineering Co., Ltd., Newport, Shropshire
Buenos Aires, Argentine—General Electric, Soc. Anon., Victoria 618 Esq. Peru.

The International Paper and Power Company has announced from its New York offices the appointment of George D. Bearce, of the manufacturing department of the company, as manager of the new Dalhousie mill of the International in New Brunswick, Can. Announcement also has been made of the appointment of W. N. Baker as manager of the Pyrites, N. Y., mill of the company. Mr. Baker formerly was an engineer with the International at the Glens Falls, N. Y., mill.

The Oldmill Paper Products Corp. of New York City, has increased its capitalization from $1,000 to $50,000.

The Edgar B. Flack Co., Inc., has been incorporated under New York State laws to deal in paper with a capital of $50,000. The incorporators were Edgar B. Flack, of 11 West Forty-second street, New York; William F. Delaney, and Ernest A. Zema.

The Robert Gair Co., manufacturer of boxboard and paper boxes with principal offices at 420 Lexington avenue, New York, has announced that plans have been completed for building a large addition to its board mill and fabricating plant at Piermont, N. Y. The new building will be 500 feet long and 200 feet wide, four stories in height and of reinforced concrete construction. The plans were drawn by William Higginson, architect, and it is expected to have the new structure finished late next spring.

The Mott Haven Paper Stock Co. of New York City, has been incorporated under New York State laws to deal in paper manufacturers' supplies. The new corporation is represented by S. W. Cohen, of 560 Melrose avenue, New York.

◆ PACIFIC COAST ◆

WASHINGTON

Pacific Straw Paper & Board to Add New Equipment

New equipment to be added at once has been announced in the program of the Pacific Straw Paper & Board Co., Longview. A new building is being completed for the pulp grinders which are to be used in grinding the logs for a new kind of product in the nature of strawboard.

Other new pieces of equipment announced as additions include a lining machine and a pasting machine for use in the board product of several layers. The general output of the plant is to be considerably increased.

The steamer Bordeaux Maru was loading paper for Japan at the Longview dock September 19, the output of the Longview Fiber Company's plant. Another boat loading at the same time here was the Munami, this paper being shipped to California.

The Seattle office of Packer-Scott Co. will be ready for occupancy early in October, serving as a branch of the main headquarters at Portland. Arthur Hosfeldt, sales manager of the company is supervising the opening. The new place is costing about $40,000. All kinds of paper and janitors' supplies will be handled there as in the Portland office. C. M. Packer of Portland is president of the company.

OREGON

Columbia Paper Box and Columbia Tag Merge

Articles of incorporation were filed late in September by the Columbia Paper Products Co. of Portland, with capital stock as follows: 2000 shares common stock, no par value and 500 shares preferred stock at $100 each. The new company is a merger of the Columbia Paper Box Company and the Columbia Tag Company.

George G. Guild who has been head of both the former individual concerns will be president of the Columbia Paper Products Co. Other members of the incorporation are Wm. D. Bennett and Donald H. Guild.

An addition to the box factory will be started at once, with boxboard and several other paper products being added to the company's manufacturing lines. The present buildings and equipment are valued at $200,000.

The Austin Company has been awarded the general contract for the recently announced plant of the Paper Makers Chemical Corporation which is building in Portland.

The Sitka Spruce Pulp & Paper Co. has its mill completed at Empire, according to C. McC. Johnson, president, and operation will be under way early in October.

Hawley Will Pay Dividends

Hawley Pulp and Paper Co. which early this year experienced financial difficulties and was forced to defer dividends on its first preferred stock, is now in a position to pay all dividends in arrears, which will amount to $5.25 per share on October 1, according to announcement of Blythe & Co., on September 17, this financial concern having taken over the control of the Hawley company in June, as a means of protecting preferred stockholders.

Statement of Blythe & Co. explains that they instituted new policies and operating economies, as well as new management, and that these changes have resulted in making the operations of the mill profitable.

Fir-Tex Plant Under Way

The Fir-Tex Insulating Board Company has started construction of its $2,500,000 project at St. Helens, preliminary plans for which were announced some months ago. Following a meeting of the directorate September 12, it was stated that the J. F. Shea Co. of Portland had the contract and would start construction at once, with completion expected by spring.

The plant is advantageously situated for both rail, deep water and good highway connections for shipping. The site acquired includes 175 acres with a water frontage of 2,700 feet.

The plant will make insulating board and pressed building board, using fir, hemlock and spruce, and will employ about 250 at the start.

The physical details of the new plant as announced thus far include as the first unit a group of reinforced concrete factory buildings 969 feet long. These buildings include a digester building 45x158 feet, four stories high; a shredder building 40x170 feet; machine room 48x144; dryer building 48x512; retort building 36x272; finishing room 64x96; boiler house 44x84; laboratory 48x128 and a large storage room for lumber. The dock on the Columbia river will be 800 feet long.

CALIFORNIA

Zellerbach Paper Co. Has New President

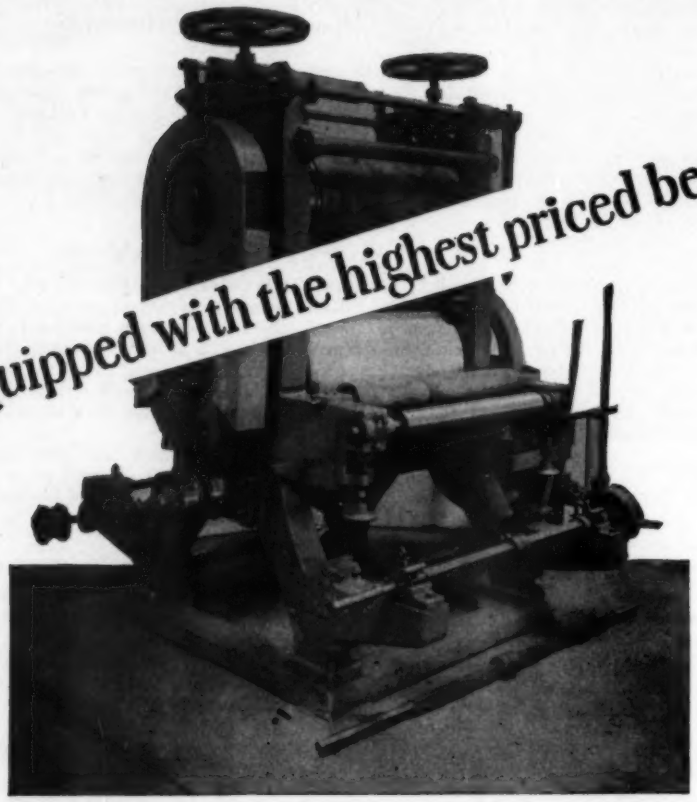
H. L. Zellerbach was elected president of the Zellerbach Paper Co. at a meeting of the board of directors last month in San Francisco. This company is a subsidiary of the Crown-Zellerbach Corporation, the new president of the Zellerbach Paper Co. being also a vice president in the Crown-Zellerbach Corporation, a position which he still retains.

H. L. Zellerbach succeeds Isadore Zellerbach who became chairman of the board of directors of the Zellerbach Paper Co. Isadore Zellerbach is also president of the Crown-Zellerbach Corporation.

Frank R. Philbrook, representative in Los Angeles for the past eight years for the Graham Paper Company, has moved to San Francisco to act as assistant to C. E. Sewick, Pacific coast manager of the company. Ralph Reid takes Mr. Philbrook's place at Los Angeles.

ANOTHER ONE OF THE 47 MANUFACTURERS OF MACHINERY
FOR THE PAPER INDUSTRY THAT USES SKF BEARINGS

JOHN WALDRON CORPORATION



Equipped with the highest priced bearing in the world

YOU MAY BUY A BEARING AS A BARGAIN BUT TRY AND GET A BARGAIN OUT OF USING IT for Nothing is apt to cost so much as a bearing that cost so little.

SKF Puts the Right Bearing in the Right Place

The Pioneer Paper and Railroad Bearing
That's Why Waldron Uses Them

"With High Speed Bearings," says the John Waldron Corporation when advertising this Embosser and that means... SKF Self-Aligning Roller Bearings on both rolls. Just how important this is may be judged when they add, "Production cost is considerably lowered by tripling the speed over that of the plain bearing machine. Power absorbed by this high speed machine is no greater than that absorbed by the plain bearing machine when running at lower speeds."

Smoothly and easily, the Waldron Embosser runs at 150 to 250 feet per minute on SKF Self-Aligning Roller Bearings. Heavy pressures and the severe duty imposed do not in the least affect these rugged, long-life bearings. And for a good reason. Are these not the same bearings which are used on the railroads of the world... more than all types of anti-friction bearings combined? They are. The original installation on the Pennsylvania has gone nearly a million miles...without trouble. That's the kind of service Waldron believes in building into its embossers... regardless of price.

SKF INDUSTRIES, INC., 40 East 34th Street, New York, N. Y.

2389

SKF

Ball and Roller Bearings

WISCONSIN

Northern Paper Mills and Tuttle Press Merge

Mergers, expansions and conventions have been the major events of the paper industry in Wisconsin during the last month. Mills not only are spending immense sums to keep abreast of the increasing speed and efficiency of production, but they are adding to their buildings and equipment to increase their output to take care of present or anticipated growth in sales. Another six months will see Wisconsin at a new production peak, with more of the higher grades and specialty lines than ever before and less of newsprint.

The newest merger of large size is that of the Northern Paper Mills, Green Bay, Wis., and the Tuttle Press, Appleton, Wis. Here, as in several big consolidations during the last year or two, a mill with large production has annexed a converting plant and with new marketing outlets. A corporation with gross assets of $14,000,000 has been created by the merger. The corporations retain their separate identity and the executive personnel remains the same in the Tuttle Company.

A. F. Tuttle, who continues as president of the Tuttle Press, invented the first multi-color web printing press for lightweight wrappers in 1897 and the company bearing his name was incorporated in 1901 at Elgin, Ill. It was moved to Appleton in 1902 to be near the sources of supply and has been making napkins, crepe, holiday wrappings, box coverings, envelope linings and other specialized products ever since.

There will be added to the present lines a line of fine tissues not previously manufactured by the Northern Paper Mills. The selling organizations of the two companies will be combined and the Northern will have the benefit of a long established contact in ten important centers of the United States and fourteen others located in Canada, Mexico, Australia, British Isles, Porto Rico, the Philippines, Hawaii, Brazil, Uruguay, Argentine, Chile, Peru, Norway and Sweden.

Changes have been made in the directorate of the Northern Paper Mills to take care of the principal owners of the Tuttle company. New board members include the following Tuttle officers: A. F. Tuttle, president; A. B. Weissenborn, vice president; G. E. Buchanan, secretary; Henry W. Tuttrup, a director, and R. H. Purdy, general manager. Others on the Northern's board under the increase are: W. P. Wagner, president of the Northern; Judson G. Rosebush, vice president; A. R. Burton, treasurer; Charles A. Goodman, lumberman; F. J. Harwood, president of Appleton Woolen Mills; Earle Murray, insurance executive; Louis Schriber, president of the First National Bank, Oshkosh, Wis.

Mr. Rosebush formerly was treasurer of the Northern Paper Mills and has been made a vice president. He has been general manager during the period of the company's upbuilding and continues in that capacity. Lester G. Wood, sales manager, also has become a vice president, and A. K. McNaughton, purchasing agent, has been made assistant secretary. Mr. Burton succeeds Mr. Rosebush as treasurer, and E. A. Lindbergh, office manager, is assistant treasurer.

Financing of the merger will be accomplished in part through the issuance of $500,000 worth of 6 per cent cumulative preferred stock. The company's common stock also is being listed on the Chicago Stock Exchange. There are more than 200 stockholders and the company's payroll in both plants has about 700 employees.

Fort Howard to Make Further Improvements

Further improvements will be undertaken immediately by the Fort Howard Paper Company, Green Bay, Wis., despite the fact that the company has just expended $175,000 for this purpose. Another investment totalling $200,000 will provide a converting and warehouse building, new boiler and auxiliary equipment, and a bleach plant.

The converting and warehouse building will be 100 by 200 feet in size, three stories high and requiring one and a half acres of floor space. It will cost about $100,000, with equipment. About $50,000 will be spent on the new boiler, stokers, superheaters and controls. The bleach plant will be two stories high, 65 by 125 feet in size, and its cost will be $75,000. Previous improvements included steam turbines and electric drives. Certain patents give the company claim to the fastest tissue machine in the world. The company has accomplished all this progress in its ten year existence under A. E. Cofrin, president and general manager. There are 300 persons employed.

An entirely new building 40 by 75 feet in size will be built by the Sawyer Paper Company, wholesalers, of Neenah, Wis. It will be one story, concrete and steel, with 9-foot basement. The company outgrew its former quarters and now will have adequate office, warehouse and shipping facilities.

Another forward stride in the Wisconsin River Valley section is the announcement of the Tomahawk Kraft Paper Company, Tomahawk, Wis., that a second paper machine will be installed soon. Additional financing necessary for the expansion was authorized by the stockholders, since it was found that additional preferred stock would have to be issued. The company will offer a bonus of common stock with the preferred.

In preparation for the use of commercial pulp in its mill, the Riverside Paper Corporation, of Appleton, Wis., has begun construction of a new warehouse 46 by 154 feet in size, with face brick and reinforced concrete. The contract was awarded to C. R. Meyer & Sons Co., and totals $16,000.

Walls are beginning to rise for the new factory building of the Marathon Paper Mills Company at its converting branch at Menasha, Wis., known as the Menasha Products Company. The foundation piers are almost completed and the superstructure will be rushed so the building will be enclosed before winter. The new unit will house the extensive carton department and the old building will be razed.

The Marathon Paper Mills Co., Rothschild, Wis., has been given an abatement of $8,006 and a credit of $115,875 by the internal revenue bureau on federal income taxes. The company re-determined its excess profits tax, changes in valuation of inventories and reduction in income and property tax. An over assessment of income and profits taxes therefore was shown in 1917 and 1919 and allowed.

Preparations are already being made at Green Bay, Wis., for the annual Fox River Valley Safety Conference to be held there next June. The local safety council has launched a citywide safety campaign to include traffic and the home as well as industry. The purpose is to demonstrate the possibilities of safety so effectively that when the delegation of 1,500 safety advocates hears about it next spring, they will do likewise in their own cities. A meeting was held recently for all leaders of safety work at Green Bay, and an address was given by Ernest W. Corn, field representative of the National Safety Council, Chicago, relative to the contemplated program. C. R. Phenicie is chairman of the Fox River Valley conference, and W. J. Peacock, of the Northern Paper Mills, is local chairman.

Most of the erection work has been completed on the new No. 7 Beloit paper machine at the Northern Paper Mills, Green Bay, Wis. Production will be started within a month, with a run of 1,200 feet of tissue a minute and a maximum production of 50 tons daily. The sheet will be 175½ inches wide. Two of the oldest machines in the mill will be dismantled.

This season's pulpwood harvest of the Consolidated Water Power and Paper Company, of Wisconsin Rapids, Wis., amounted to about 60,000 cords, according to records which have been kept of the rafts towed across Lake Superior from Canada to Ashland, Wis. The tug Butterfield, owned by the company, has been engaged in this work all summer. The wood is shipped by rail from Ashland to the mills.

ANNOU

THE BIRD

. . . and CLEANER PAPER

For the first time in the history of paper making you can now make really clean paper. The Bird Centrifiner, a new, revolutionary yet simple machine, has made obsolete all previous ideas of paper quality. A perfected separator of the centrifugal type, it whirls the dirt out of your stock, whether heavy or light, with an action hundreds of times as powerful as the force of gravity.

The Bird Machine Company has done it again. The Bird Centrifiner is the biggest contribution to the making of clean paper since the Bird Screen.

The Bird Centrifiner* like every other item of Bird Machinery, sets new standards for the continuous production of uniformly good pulp and paper. Write today for complete information.

*Manufactured under license from the Centrifugal Engineering and Patents Corporation, holder of the former Sirkensator patents.

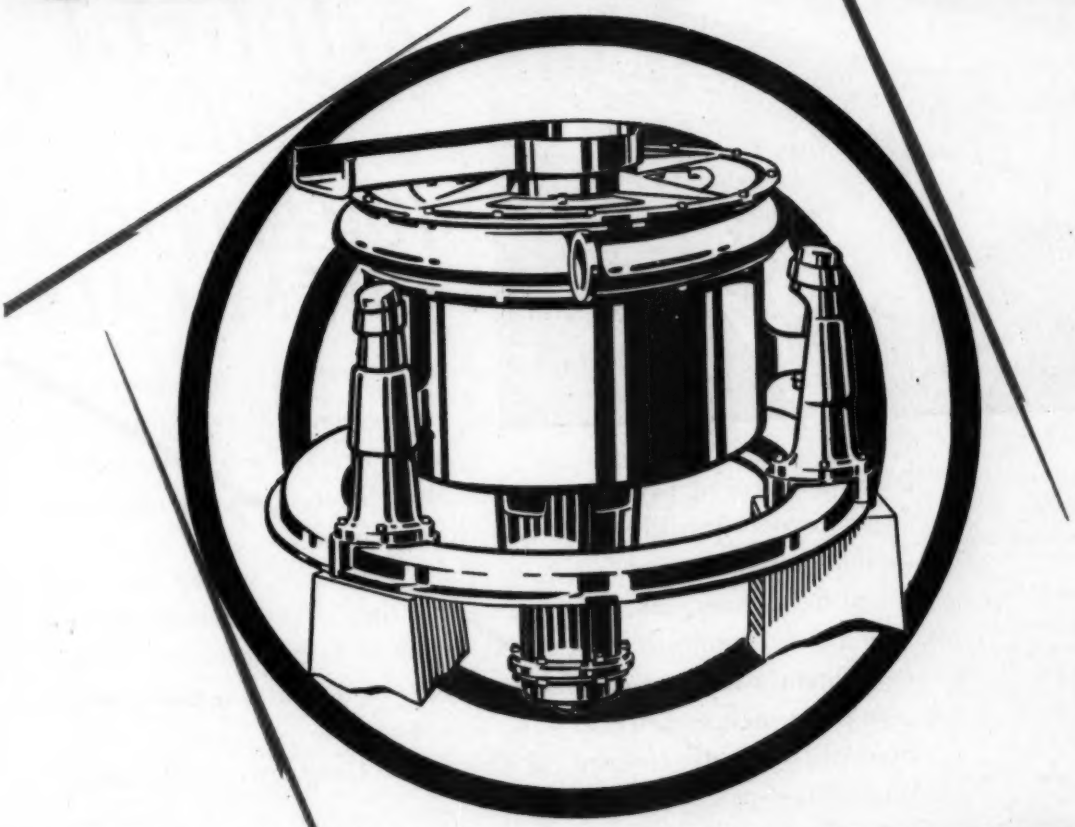
BIRD MACHINE COMPANY
South Walpole :: Massachusetts

NOW YOU CAN MAKE

• • • USE BIRD

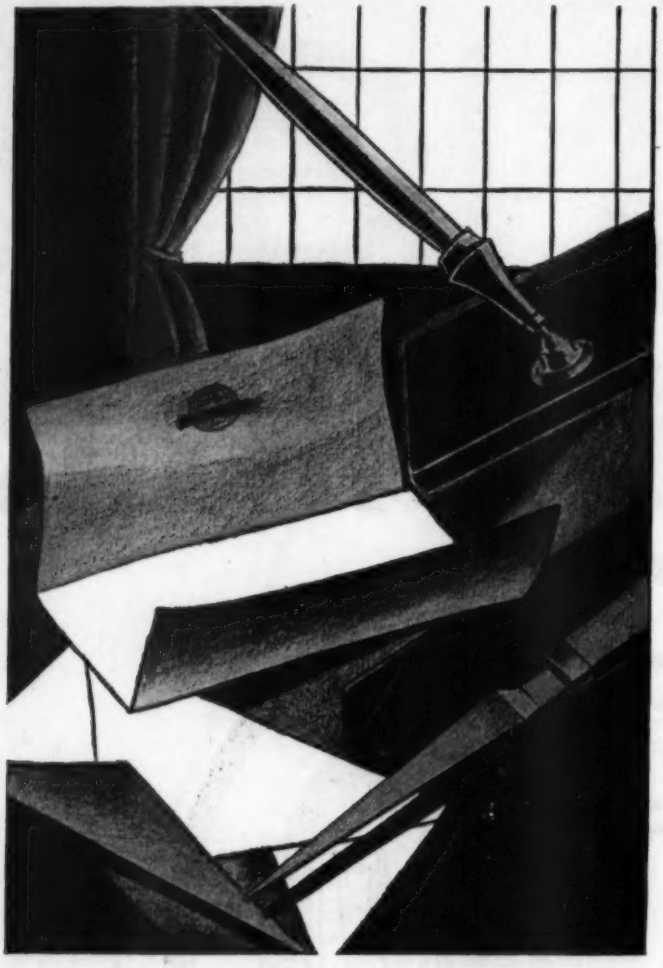
NCING...

CENTRIFINER



PAPER THAT IS REALLY CLEAN

CENTRIFINERS



What is this Quality Appeal of KALBFLEISCH CHEMICALS

BEFORE chemicals can be given a value rating there must be standards of comparison. Manufacturers of paper have established them. They are necessarily high, for paper making is a difficult process.

Kalbfleisch goes about meeting these standards in the thorough, scientific manner characteristic of this firm. The materials that go into these chemicals must stand severe tests for quality. Modern equipment, experienced personnel, close technical control—help to give them high excellence.

So quality is justly claimed for Kalbfleisch Chemicals, for Kalbfleisch quality is *dependable.*

Kalbfleisch Chemicals Include

Alum (both Commercial and Iron Free)
Salt Cake
Muriatic Acid
China Clay
Satin White
Casein (Domestic and Imported)
Glauber's Salt
Sulphuric Acid
Soda Ash
Ammonia
Rosin Size
Sulphate of Soda
Nitric Acid

Plants:
ERIE, PA.
KALAMAZOO, MICH.
CHATTANOOGA, TENN.

The KALBFLEISCH Corporation

200 FIFTH AVENUE, NEW YORK, N. Y.

SYMBOL of QUALITY KALBFLEISCH CHEMICALS FOR OVER A CENTURY

Plants:
ELIZABETH, N. J.
WATERBURY, CONN.
DE QUINCY, LA.

Nekoosa-Edwards Holds Forest Field Day

How the Nekoosa-Edwards Paper Company defied the usual beliefs concerning "tree farms" and made an outstanding success of scientific commercial forestry was shown in an unique event on Oct. 3 and 4 at Nekoosa, Wis., where one of the company's large mills is located. Here forest, paper and lumber experts and officials gathered to see at first hand what the company had done, and how its methods could be applied in solving the problem of the entire Great Lakes region.

Co-operating with the University of Wisconsin and the United States Forest Service, the paper company conducted a round table discussion of problems and showed the various steps in successful tree planting. As a preliminary, the advisory committee of the Lake Forest Experiment Station met with Raphael Zon, director of the station, to consider the situation. It was their conclusion that the forest fire problem is far from being solved, as evidenced by the conflagrations during the last year and the difficulty with which they were stopped. Removal of slashings and the "weeding out" of second growth timber are advocated as aides in this work.

About fifty persons who had accepted the invitation of the Nekoosa-Edwards company gathered to engage in this intensive study of forestry. They attended a dinner at the Bull's Eye Country club, with William Mauthe, chairman of the Wisconsin Conservation Commission, acting as chairman. The principal speaker was Gov. Walter J. Kohler, of Wisconsin. He said he favored powers such that the state conservation commission could move with greater freedom and rapidity in reforestation and fire prevention work. He favors a policy by which the more prosperous counties in the southern part of the state would help those in the cutover regions, where lands are going delinquent that could be devoted to forestry purposes. Dean W. C. Coffey, of the agricultural college of the University of Minnesota, also spoke advocating systematic, well planned reforestation work instead of indiscriminate planting without purpose. It was agreed that education is the principal need, and that the public should be taught that forests are sacred heritage, deserving of protection from fire. Paper and lumber companies were urged to use their cutover lands and farmers their wood lots to guarantee a supply of timber for the future.

The Nekoosa-Edwards Paper Company has planted 1,500 acres and has a program providing for 2,000 acres of tree planting a year. By using commercial fertilizers, pines are as big in one year as in three ordinarily. Jack pines transplanted four years ago are now eight feet high. L. M. Alexander, president of the company, explained that he went into this project for the sake of his sons and the reluctance to some day scrap mills representing an investment of millions. In thirty-five years, the company expects to start harvesting and continue annually to obtain enough pulpwood to keep its two big kraft mills at Nekoosa and Port Edwards in operation.

J. B. Nash was in charge of the forestry field day and was assisted by F. G. Kilp, company forester. They showed all processes connected with the tree nursery, transplanting and care of the trees. Visitors also learned how fire lines as wide as a road are cleaned out around each forty acres and kept plowed up. A forest fire was set and methods shown of controlling it. The entire conference was believed to be of inestimable value in the furtherance of forestry work and fire prevention, with a view to encouraging like methods all through the Great Lakes states.

Employees of the Marinette and Menominee Paper Co., Marinette, Wis., are to have the benefit of group insurance arranged by the company with the Metropolitan Life Insurance Co. Life, disability, sickness and accident benefits will be provided in policies, with the company paying a part of the cost.

Reforestation work will be started immediately in the Bayfield federal forest in Northern Wisconsin. An inspection made by L. F. Kneipp, of the U. S. Forest department, brought the announcement that Norway and white pine will be planted at once. The forest has 112,000 acres.

Alterations of a very extensive nature are being made by the Kimberly-Clark Corporation in the former Lakeview Paper Company mill at Neenah, Wis., which it acquired this summer. Additions are being built to provide a larger finishing room and storage. The machinery is being changed over to a line of high grade school papers, wall paper and other specialties. The mill formerly was owned by Sears, Roebuck & Co., and was used for making catalogue paper.

The Employee Benefit Association of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., has reduced the eligible age for membership from 55 to 50. Another ruling admits employees who have served six months instead of a year.

Classes in foremanship and paper and pulp manufacture are being resumed in various paper mill cities under auspices of the state department of vocational education. Some are being held in the mills and others in the schools in the evening.

F. J. Sensenbrenner, president of the Kimberly-Clark Corporation, Neenah, Wis., is arranging to build a palatial home and country estate in the near future. He has purchased a large tract of land on Lake Winnebago, near Neenah.

M. B. Peacock, of the Marinette and Menominee Paper Co., Marinette, Wis., has been transferred to Chicago to become assistant western sales manager of the Continental Bag and Paper Corporation. He is succeeded by Harry E. Munson.

The new $150,000 foundry of the Moloch Machine and Foundry Co., Kaukauna, Wis., was officially opened with a banquet of stockholders and customers recently. The company is engaging in the making of steel castings. R. M. Kanik, president, was in charge of the festivities.

◆ MICHIGAN ◆

Paper Technologists Club Meets

The Paper Technologists Club of Kalamazoo had a very profitable and interesting meeting Wednesday, September 11, at the cottage of Frank Whittington. A report was given on work done to standardize rosin size analysis.

The Value of Rags was the subject of a paper read by Carl C. Schneider, in which the handling of materials was discussed from all angles. The meeting was voted a most interesting and instructive one.

The Rex Paper Company entertained a delegation of 20 to 25 sales representatives of the Chicago Paper Company, September 19, and 20. President Merrill B. King arranged a luncheon at the Park Club which was followed by a round of golf. Opportunity was also given to inspect the local plant.

The Michigan Division of the American Pulp and Paper Mill Superintendents Association will resume its meetings October 17th at the Park American Hotel, Kalamazoo, Michigan, at which time the annual election of officers will be held. This association has realized a very successful year, and all the members look forward to the opening meeting of this year. The speaker for this meeting has not as yet been chosen.

The Merco Nordstrom Valve Company, San Francisco, Calif., has opened a new office in Atlanta, Ga.

John J. Spinelli, paper mill supplies, formerly located at 225 Broadway, New York City, has removed to No. 12—79th street, Brooklyn, N. Y. The new telephone number is 7469 Shore Road.

WHAT *is* *Effective lubrication?*

The cost per ton of finished product is the test. Many mills using Texaco Lubricants are operating at a cost as low as *six cents* per ton. Where other lubricants are being used the cost is often considerably higher. Conditions naturally differ but effective lubrication is always low-cost lubrication. The *annual* expenditure for lubricants is often less even though the price per gallon or per pound may be higher. The *annual* expenditure for labor, repairs and replacements is always less.

The Texas Company's lubrication engineers have given years to the study of paper and pulp mill lubrication. They are in constant touch with developments and at all times have the closest cooperation of refinery experts in the production of the most effective lubricants for any given purpose or condition.

As a result, paper mill operators who take advantage of Texaco Lubricants and Texaco Lubrication Service are *certain* of the lowest possible lubrication costs per ton. Write The Texas Company and find out just what Texaco Lubrication Service can do for you.

TEXACO LUBRICANTS

THE TEXAS COMPANY
17 BATTERY PLACE, NEW YORK CITY

THERE IS A TEXACO LUBRICANT FOR EVERY PURPOSE

Practical Helps for the Mill Man

Conveyor Shock Absorber

THE bearings, sprockets, and shafting of pulpwood and wood refuse conveyors are often subjected to unusual shocks because of the nature of the service to which they are put. One large pulp and paper mill operation has found it profitable to equip the tail shaft bearings of such conveyors

Conveyor Shock Absorber—Note Spring Relief Mechanism in Bearing Framework

with a spring relief mechanism. The bearings are held in alignment by heavy coil springs which are placed between the bearings and the end of the frames. The bearing frames and springs are designed to permit adjustment in the tension of the springs. With such a relief mechanism functioning as a shock absorber to an entire conveyor unit, it is easy to appreciate how unusual strains to conveyor trough, chain, and shafting are absorbed.

Hazards of Cleaning Wires with Acid

THE wires or screens of fourdriniers, deckers and save-alls become clogged with slime after a period of use and no air-pressure, steam or water stream will dislodge the stuff. The removal of the slimy mass which chokes the wires and screens is most effectively done with a fairly concentrated solution of sulphuric acid in water.

The one who mixes and applies the acid should never do it unless he wears goggles. It is furthermore important that the acid should always be added to the water, never the other way. An acid-resisting bucket is used. This is filled half-full with water and the acid added gradually at intervals in a thin stream. If the water is added to the acid a violent reaction ensues, great heat being developed. Depending on the amount of water added at one time in this wrong way, great damage may result by the mixture spurting up and inflicting terrible chemical burns on the operator. The acid mixture should not be allowed to remain for any length of time in contact with the wires as it has a most destructive action on them.

Pulpstone Cushion

MUCH care is required to properly set a pulpstone on a pulpstone spindle. The flanges must be drawn against the sides of the stone in such a manner that no strains are developed in the stone. Frequently insufficient care is taken in setting a stone and a broken stone after a few days operation may result. A groundwood mill superintendent has found it helpful to cushion the flange faces against the stone with circles of dryer canvas. A circle of dryer canvas a little larger than the diameter of the pulpstone flange is cut for each of the two flanges of the stone. When the canvas is placed in position on the shaft and the flanges drawn into position, the canvas actually serves as a cushion and makes it easier to set a stone properly.

Bursting Strength of Pipe

THE pressure of a liquid or gas in a pipe is exerted in every direction, and tends to tear the pipe apart longitudinally. Several formulæ have been developed to determine the approximate bursting strength of pipe that are operating under internal pressure. One formula that has been commonly used for this purpose might be expressed as $\frac{S}{R}$ equals $\frac{d}{2t}$ when S equals resisting tensile unit-stress, R equals pressure per unit area of liquid or gas, d equals diameter of pipe, and t equals the thickness of the pipe. The unit pressure R for water may be computed from a given head by finding the weight of a column of water of that height and one square unit in section. If the height of the column of water is given in feet, then the unit pressure per square inch may be computed by multiplying this height by 0.434. The use of this formula is demonstrated in making calculations of a typical problem, such as—Find the factor of safety of a 12-inch cast iron water pipe with a wall thickness of ⅝-inch and an ultimate tensile strength of 20,000 pounds per square inch that is functioning under a head of 300 feet. In this case, R equals 0.434 x 300 or 130.2 pounds per square inch. The unit stress then becomes—S equals $\frac{12 \times 130.2}{2 \times \frac{5}{8}}$ or approximately 1250 pounds per square inch. The factor of safety would equal $\frac{20{,}000}{1250}$ or approximately 16 which is ample under most conditions.

New Trade-Marked Hack Saw Blade

A new hack saw blade of high quality and distinctive appearance has just been put on the market by the Simonds Saw and Steel Co. of Fitchburg, Mass. The new blade with registered trade-mark colored red end and bearing the name "Red Streak" promises to raise the standard of hack saw quality above any other blade in the field.

The development of the new blade has been under the direction of the company's engineers at its plant in Fitchburg for over a year. Research starting at the foundation —the steel—has been made and a highly wear-resisting metal has been developed at Simonds' steel mill in Lockport, N. Y. Experiments conducted over a long period have established a tooth shape which has been adopted because of its ability to stand up under severe metal cutting conditions, eliminating the difficulty of the teeth shelling when cutting hard metal. There is no change in the general shape of the blade, but a special method of heat-treating brings out more completely the steel quality, edge-holding teeth, and ability to withstand to a greater degree the shock resulting from difficult metal cutting.

The Red Streak blades are made for hand and power machine use, and are distinctively marked with a red end, a feature which identifies the Simonds blade, and makes it possible to select one at a glance. These blades are attractively packed in easily recognized boxes.

J. Leonard Apedaile, director and general manager of Price Bros. & Co., Ltd., Canada, was recently elected vice-president of the company, succeeding the late George H. Thomson.

GREAT NORTHERN PAPER CO

AT MILLINOCKET, MAINE

another of the great mills that is now operating

Briner Economizers

Licensed Under Patents of E.A. Briner and John E. Alexander

The two huge new machines installed to replace the older fourdriniers in this Great Northern Mill, were both equipped with Briner Economizers. Further outstanding testimony of the importance attached to insuring maximum efficiency in machine room operation by mills distinguished for their success.

The advantages secured and the economies effected by operation of Briner Economizers are not confined to only the new mills or the largest mills. Nearly all mills, regardless of size or design can similarly profit from the substantial reduction in steam costs that the Briner Economizer assures.

Obviously, the greatest benefits from the operation of Briner Economizers are derived during the winter season when steam and heat requirements are heaviest. For this reason it is advisable to consult us now regarding your mill requirements so that installation can be made before extreme cold weather sets in. Our engineering department is at your service.

J. O. ROSS ENGINEERING CORPORATION

208 W. Washington Street, CHICAGO — Main Office—122 East 42nd Street, NEW YORK — 519 American Bank Bldg., PORTLAND, ORE.

ROSS ENGINEERING OF CANADA, LIMITED

NEW BIRKS BLDG., MONTREAL

ROSS SYSTEMS

HEATING—VENTILATING—DRYING

Canadian News

Scandinavian Agreement May Benefit Canadian Pulp

Now that the principal pulp exporters of Norway, Sweden and Finland have aranged to pursue a common sales policy instead of a competitive one, it is the opinion of Harry A. Scott, Canadian Trade Commissioner in Liverpool, that the United Kingdom pulp market may prove more attractive to Canadian producers of groundwood. As an indication of prices, he states that whereas quotations on Scandinavian groundwood have averaged around $15.20 per moist ton (2,240 pounds), c.i.f. United Kingdom port (inclusive of agents' commission), until recently, values have been moving gradually upwards and present quotations are at about $15.80.

The principal source of supply of groundwood for English newsprint mills has always been Norway, from which an average of over 50 per cent of the imports are drawn. Sweden, Finland and Canada supply the balance. While Canadian shipments for a number of years past have fluctuated to quite an extent, more recently imports from Canada have definitely fallen off. In 1928 imports of mechanical wet pulp from the Dominion were only 70,000 tons, as compared with 129,000 tons in 1927 and 165,000 in 1926. The total imports to the United Kingdom during the past three years have averaged around 825,000 tons per annum, and the reduction in Canadian supplies has been taken care of largely by increased shipments from Finland and Sweden.

Another reason Mr. Scott gives for thinking that Canadian groundwood manufacturers may find the United Kingdom market more interesting at present, is the increasing tendency of English newspapers to control their own supplies of newsprint, as shown by the erection of certain new mills in that country and the constant enlargement of several others, most of which belong to one or other of the large English newspaper groups. Canadian newsprint exports to the United Kingdom have shown a heavy increase over the past three years. During the first six months of 1929 imports from the Dominion were higher than from any other source, and the further development of this trade is expected.

It is reported that arrangements have been made for the sale in Canada, by Paper Machinery, Ltd., of Montreal, of a Swedish disk mill for the beating of pulp.

Increase in Paperboard Prices

Paperboard manufacturers in Canada have come to an understanding which is expected to do away with needless competition of a type that has been adversely affecting earnings. Conditions in this branch of the pulp and paper industry have developed much along the same lines as in newsprint. While the demand for paperboard has been growing steadily and consumption on a per capita basis is still below that of the United States, new installations have been rather too rapid. Consequently, the paperboard manufacturers have gone after new business, which has been secured, apparently, too frequently at a price which does not permit of much profit. It was obvious that this state of affairs could not continue.

Last month a meeting of paperboard manufacturers was held in Montreal, at which the Ontario manufacturers were present, and conclusions were arrived at which should bring about a better feeling in the industry. It is understood that much of the talk centered around sales practices. In revising the prices, the general trend was upward, while a few lines were slightly reduced.

During the last eight years production of paperboard has forged ahead. In 1921 only 89,114 tons were produced, but as this was the first year of the post-war depression it cannot be taken as a normal output. But in each of the following years output advanced, and in 1927 production totalled 161,497 tons, the highest point ever reached by this branch of the paper industry. Returns for last year, which are not yet available, will likely show a further increase.

Rush Inventory of Dominion Forests

More active measures will be taken by the Dominion Forestry Branch and the corresponding branches of the several provinces to speed up the inventory of the forest resources of the country, it was decided at a representative meeting recently held in Ottawa. Reports of the various administrations showed that in all some 382,000 square miles have been covered by forestry surveys of some kind, about 164,000 square miles by stock taking or more intensive surveys, and 218,000 square miles by reconnaisance surveys. Since the total forest area is estimated to exceed 1,500,000 square miles, it was thought that there was urgent need for speeding up the surveys, for a knowledge of the nature and extent of the forest resources of the country is essential for stable forest policies.

The conference agreed that each authority should co-operate in conducting a national forest inventory with the objective of covering at least the accessible areas within five years. The Federal Forest Service will act as a clearing house for information concerning the forest resources of the Dominion as a whole, and the provincial services will furnish periodically reports on the surveys as completed.

Pulp and Paper Most Important Industry

According to a report of the Dominion Bureau of Statistics, the pulp and paper industry is the most important manufacturing industry in Canada, heading the lists in 1928 for gross and net values of manufactured products as well as for distribution of wages and salaries. In total capital invested, the industry is second only to electric light and power plants and in total number of employees it is second only to sawmills. In net value of production, the industry has headed the lists since 1920, when it replaced the sawmills. The gross and net values of production for the last five years were as follows:

Year	Gross Value	Net Value
1924	$179,259,504	$107,025,628
1925	193,092,937	116,577,947
1926	215,370,274	130,004,809
1927	219,329,753	134,516,673
1928	233,535,326	145,070,907

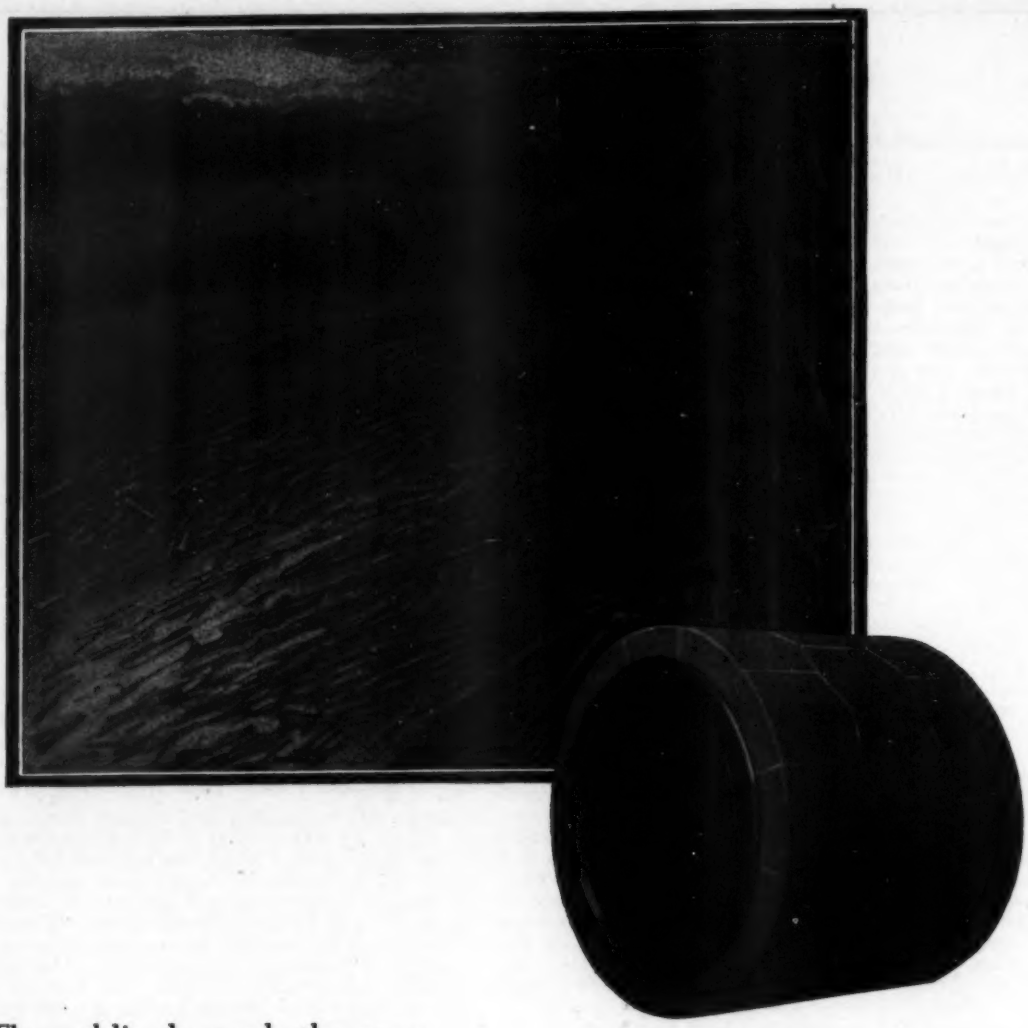
Newsprint paper made up 84.7 per cent of the total reported tonnage of paper manufactured in 1928. The newsprint amounted to 2,414,393 tons valued at $144,146,632, as compared with 2,082,830 tons in 1927 valued at $132,286,729, an increase of 15.9 per cent tonnage and 9 per cent in total value. In the first eight months of 1929 the Canadian output of newsprint is estimated at almost double that of our nearest competitors in the world's newsprint market.

❖ QUEBEC ❖

Forestry Research Bureau to Be Organized

Hon. Honoré Mercier, Minister of Lands and Forests at Quebec, has issued a detailed statement of the operations in progress and those pending, through G. C. Piché, director of the Provincial Forest Service.

An important innovation in the forestry policy of the province is the establishment in the near future of a special Bureau of Forestry Research to be conducted along similar lines to the Forest Products Laboratory at Ottawa and the



The public demands the news
— newsprint.

The paper mill demands wood pulp
— uniform pulp and continuous production.

The pulp mill is demanding Norton Pulp Stones.

NORTON COMPANY
Worcester, Mass.

Canadian trade now supplied from Canadian plant

Grinding Wheels
Grinding Machines

NORTON
PULP STONES

Refractories - Floor
and Stair Tiles

Federal Research Stations for the purpose of investigating the most pressing forestry problems now confronting the province.

Municipalities and other public bodies are invited by the Department of Lands and Forests to acquire waste lands and proceed with replanting measures, and the Forest Service agrees to furnish without charge the necessary trees or seeds for the enterprise.

The Provincial Forest Service has plans for still greater expansion and it is the determined policy of Honorable Mr. Mercier to plant no less than 50,000,000 seedlings of valuable species within the next five years.

A company has been incorporated in Quebec known as Fraser Realties, Ltd., with headquarters at Cabano. Archibald Fraser, president of Fraser Companies, Ltd., is head of the company and its capitalization is placed at $15,000,000, divided into shares of $100 par value each. It is understood that the organization is a personal one not connected with Fraser Companies, Ltd. The company is given authority to deal in properties, particularly timberlands and timber limits, also in water privileges and power, and the carrying on of the business of the lumber trade in all its branches, including pulp, paper and other by-products.

The announcement of a 4 for 1 split in the stock of the St. Regis Paper Co. is of interest in Canada, because the company has extensive timber limits in Quebec province, which are at the present time being logged. When the newsprint market settles, it is said to be the intention of the company to establish a large pulp and paper mill a short distance from Quebec City.

The King Paper Box Co., of Montreal, recently completed a large addition to its plant, which is now in operation in the manufacture of folding and set-up boxes.

The fact that the Quebec Development Co.'s assets have finally been completely liquidated recalls that two years ago Price Bros. & Co. received three and a half million dollars for its holdings in the Quebec Co., which were held by a trustee as collateral security under the company's bonds. At that time the president of Price Bros. stated that "It is expected that the final realization of the company's interest in the Quebec Development Co. will be of further material benefit to the shareholders." The Quebec Development Co. undertook the development and operation of the Grande Décharge and the Chute à Caron power sites. Price Bros. owned a quarter interest in the Quebec Company. The Duke-Price Co. and the Alma and Jonquière Railway were subsidiaries of Quebec Development.

G. J. Lane, formerly manager of the De Grasse mill of International Paper Co., has been transferred to the Gatineau mill of Canadian International Paper Co., where he will serve in the capacity as assistant superintendent. He has been succeeded as plant manager of the De Grasse mill by W. Noyes Baker.

It is reported that Price Bros. and Co. have disposed of part of their holdings in the Aluminum Corporation at between $450 and its record high of $539 a share. Price Bros., when they sold their Chute à Caron power site to the Aluminum Company, received in exchange a block of preferred shares and in addition 36,000 shares of common stock, which then had a nominal value of $5 a share. At current levels these shares would now have a value of some $12,000,000. All Price Bros.' investments are carried on the books at $3,600,000.

At a recent meeting of the board of directors of International Paper Co., E. A. Charlton was elected a vice-president. Mr. Charlton, who is a native of Montreal and a graduate of McGill University, was early this year appointed manager of the manufacturing department of the company to take charge of the operations of the Northern United States and Canadian paper mills of the company.

Additional Power Delivered by Gatineau

International Hydro-Electric System, through its subsidiary Gatineau Power Co., commenced delivery on September 3rd of an additional 50,000 hp. of electric energy to the Hydro-Electric Power Commission of Ontario. This quantity of power, originally scheduled for delivery on October 1st, increased to 130,000 hp. to the total energy being delivered by Gatineau Power Co. to the Commission. The energy is being sent over a 220,000-volt transmission line 230 miles long, one of the largest on the Continent, and is being distributed by the commission in the Toronto area to supplement the power from Niagara Falls.

About October 15 Gatineau Power Co. will deliver a further 20,000 hp. to the commission, raising the total deliveries to 150,000 hp. This 20,000 hp. is part of the additional quantity scheduled under contract for delivery October 1, 1930, the delivery date being thus anticipated by nearly a year.

Canada Power and Paper to Merge with Wayagamack and Port Alfred

Following negotiations extending over a considerable period, letters have just been sent to shareholders of Wayagamack Pulp and Paper Co. and of Port Alfred Pulp and Paper Corp., on behalf of their respective boards, apprising them of an offer that is being made by Canada Power and Paper Corp., looking toward the acquisition by Canada Power and Paper of all the common shares of the first two named companies. The boards of directors of both companies express their satisfaction with the offers and indicate that the holders of the majority of the outstanding common shares of both organizations have declared their intention of accepting the offers.

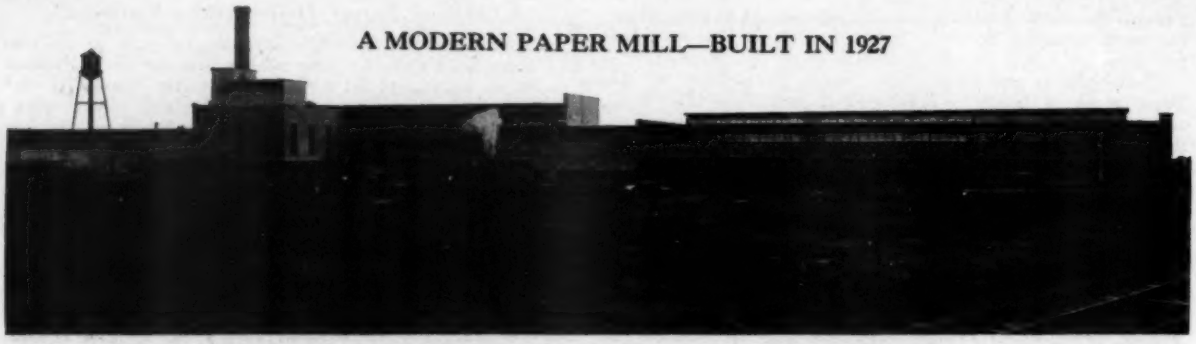
Under the terms of the offer to shareholders of Wayagamack, they will receive one and a half shares of Canada Power and Paper stock and $50 principal amount of Canada Power and Paper debentures. The offer to Port Alfred common shareholders is two and three-quarters shares of Canada Power and Paper Common stock for each share of Port Alfred common. It is understood that formal offers to both groups of shareholders will be mailed within a day or two by the Montreal Trust Co. on behalf of the Canada Power and Paper Corp.

The acceptance of these offers by holders of a majority of the outstanding shares for which offers are being made will result in bringing under unified control and operation the mills operated by Canada Power and Paper at Grand 'Mère, Shawinigan and Cap de la Madeleine, by Port Alfred at Port Alfred, and by Wayagamack at Three-Rivers, with a combined daily capacity for sale of paper and allied products in excess of 2,400 tons.

George McKee, vice-president and general manager of the Canada Power and Paper Corporation, together with a party of officials of the company, guides, and woodsmen, spent two weeks out in the woods, last month, examining a large tract of timber lands on the Peribonka River, which was acquired by Canada Power and Paper in 1925.

P. N. Fox has resigned as assistant manager of the St. Lawrence Paper Mills to accept the position of assistant to the president of the Lake St. John Pulp and Paper Co. The latter company has removed its engineering and purchasing departments from its Montreal offices, in the Drummond building, to the mill headquarters, at Dolbeau. The object is to get these departments in closer touch with production and distribution, and the physical properties of the company.

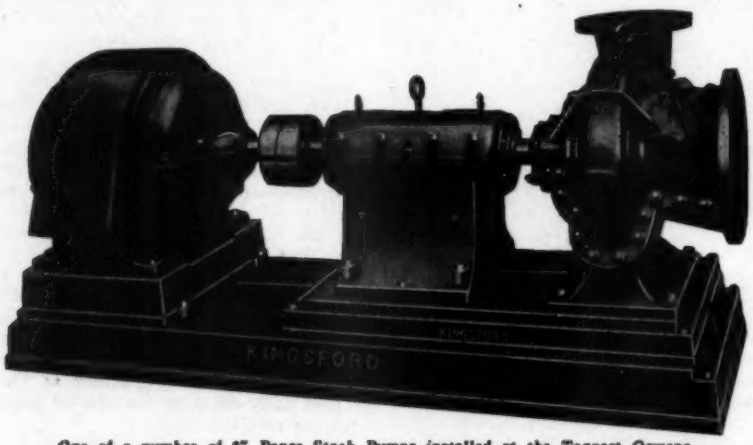
Members of the American Society of Forest Engineers, to the number of fifty or more, visited the forest nursery and plantations of Canada Power and Paper Corporation, at Grand 'Mère, last month. Much of practical as well as scientific interest was seen and discussed. Those who had seen the work only a few years ago were surprised at the excellent progress made in this undertaking under the direction of Ellwood Wilson.



PLANT OF TAGGART OSWEGO PAPER AND BAG CORPORATION

Absolute confidence has been exhibited by the Taggart Oswego Paper and Bag Corporation, Oswego, New York, in providing for the most part, centrifugal pumps for their fresh water supply, the handling of white water, stock, boiler feed and process requirements, and such installation for these purposes of—

KINGSFORD PUMPS



One of a number of 8" Paper Stock Pumps installed at the Taggart Oswego Paper & Bag Corp., Oswego, N. Y.

All KINGSFORD double suction pumps up to 10" size are made with bearing housings cast integral with the lower half of casing (machined as a unit with casing), insuring absolute and permanent alignment of bearings. Horizontal split casing provides quick accessibility to interior. Sealed bearings can be furnished in either babbitted, ball or Timken roller types. KINGSFORD patented hydraulic balancing device eliminates end thrust.

KINGSFORD multi-stage centrifugal pumps have the same construction features as listed above, same type and construction of bearings, and with either ball thrust bearing or KINGSFORD patented double acting hydraulic balancing piston.

The desirability of these features appeals to Paper Mill Operators and all of them will only be found in KINGSFORD line of pumps.

Write for further information—our 30 years of experience may be of value and profit to you.

Kingsford Foundry and Machine Works

Una-Flow Engines all Types
High Speed, Vertical,
Horizontal and Marine.
Centrifugal Pumping Machinery

Oswego, N. Y.

Internally Fired Boilers
for
Marine and Stationary Purposes
Sectional Water Tube Boilers

ONTARIO

Important Coal Find

An announcement of importance to the paper mills in Northern Ontario was made last month by Premier Ferguson when he declared that coal, long one of the few minerals which New Ontario's mining fields had failed to show, had been discovered in vast quantities on the Abitibi River, 90 miles north of Cochrane. According to expert estimates, there are from 7,000,000 to 10,000,000 tons of lignite, a low-grade coal, lying in a bed one mile long by half a mile wide at Blacksmith Rapids.

Premier Ferguson described the discovery, which has been checked cautiously by Mines Department officials under Charles McCrae, as the most important mining development in Ontario in many years. The coal can be marketed at from $5 to $6 a ton, exclusive of freight charges, in the belief of Dr. W. S. Dyer, provincial geologist, who has spent three summers working on the development.

Judging by the returns from the tests conducted by the Federal Government laboratories at Ottawa, Dr. Dyer considers that, partially carbonized this lignite may be used profitably by some of the large New Ontario paper mills, such as the one at Kapuskasing, where 500 tons of coal are consumed per day.

Figures made available recently at Queen's Park, Toronto, by the Ontario Air Service, which is engaged in protecting the forests of Northern Ontario, reveal that to date this year the "flying firemen" had put in 9,900 hours in the air on detection and suppression work. Last season the force flew upwards of 6,000 hours all told. This year they should go well past the 10,000-hour mark, to constitute an almost unbeatable record. Patrols have been carried out by the force ever since the second week in April.

With walls going up, sub-contracts have been let in the construction of a $70,000 staff house and a $15,000 addition to the service building of the Spruce Falls Power and Paper Co., at Kapuskasing, with bulk contract let to Hill-Clarke, Francis, Ltd., New Liskeard.

Tenders have been received and award is scheduled to be made in a few days of bulk contract for erection of a $57,000 addition to the plant of Canadian Paperboard Co., at the foot of Carlaw Ave., at Commissioner St., Toronto. Plans by Kerry and Chace call for an addition to the present building on the water front to be one-story with basement, steel, concrete and frame construction. The company only last year completed its new factory, and the new addition is made necessary by expanding business.

Dryden to Increase Paper Output

A new kraft paper machine for Dryden Paper Co., Dryden, Ont., which will increase the company's present paper output by 50 per cent, is about to be purchased. The contract is not yet let, but it is understood that the company plans to install the machine and have it ready for operation by the middle of next summer. At the present time the company is producing at the rate of about 21,000 tons of sulphate pulp, of which 10,000 tons are made into paper, the balance being sold in the bordering state of Minnesota. Although no official statement is available as to the projected capacity of the new machine, it is thought that the capacity will run about 7,500 tons a year.

This new move on the part of an organization which only a short time ago was laboring under a receivership, is a further indication of the strides the company has made in the past year or two. Dryden has had a steady and growing market for its products in the west and it is the expansion of this general market that has necessitated the move toward expansion. Over 70 per cent of the company's present output of kraft paper is sold under contract to the Bates Valve

NOT EVEN RALEIGH'S CLOAK

SIR WALTER RALEIGH'S cloak helped a queen over the muddy road---

But nothing in the world can bridge the gap for the pulp when a Fourdrinier wire gives out!

The liability of a broken wire interrupting the whole process of paper manufacture makes it essential that these wires be as dependable and durable as they can be made!

Tyler wires meet these requirements!

For strength of wire---for resiliency---for firmness of weave and accuracy---for ability to resist corrosion and abrasion---for all the qualities which make wires run straight and true---Tyler wires cannot be surpassed!

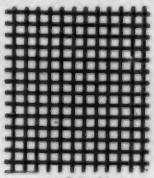
Tyler-made looms, wire drawn by a special process and woven by men of long experience, assure the dependability of our wires!

The W. S. Tyler Company
Cleveland, Ohio

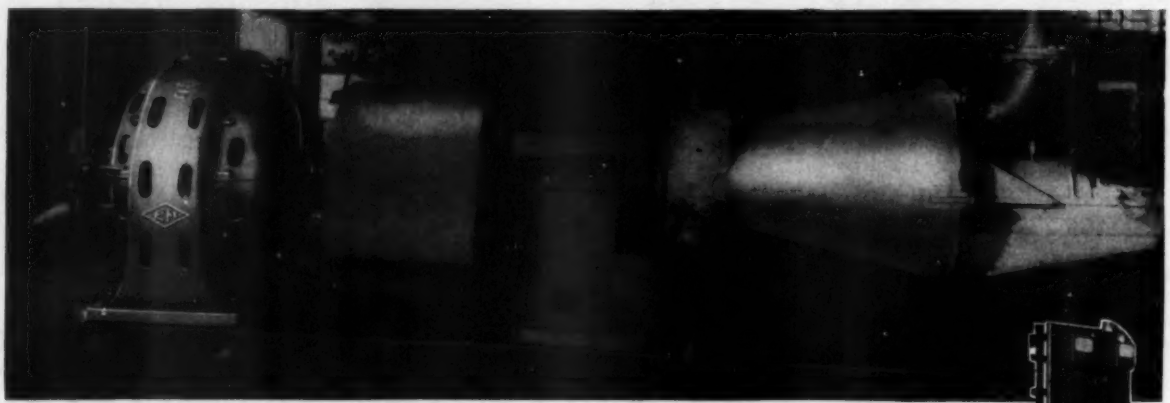
TYLER WIRES

60 Mesh Fourdrinier Wire

12 x 64 Mesh Corduroy Cloth


14 Mesh Cylinder Wire

This is the Way TO DRIVE YOUR JORDANS



200-h.p., 400 r.p.m., E-M Synchronous Motor driving a Jordan at the Cushnoc Paper Company, Augusta, Maine

WHEN you connect E-M Synchronous Motors to your Jordans you gain definite advantages that cannot be obtained through any other drive. You have the benefit of specialized design—each E-M Motor, built specifically for your hook-up. You know in advance that you will have correct leading power factor to favorably influence the motor operation of your mill. You are assured of high electrical and operating efficiency, due to the generous design of E-M Motors throughout. Constant speed is assured regardless of load fluctuations. You know your drive will not be troubled by moisture, for E-M Motors designed for Jordans have moisture-proof windings. You gain relief from slippery, wet belts. Troubles are all anticipated by E-M design. In short, E-M Synchronous Motors are the best drive for your Jordans. An E-M Engineer will be glad to call at your convenience and explain clearly and conclusively how and why. No obligation. And in the meantime, write for "The Most Efficient Drive in Industry", a 56-page illustrated book which contains a great deal of information about Synchronous Motors and their uses in paper mills.

Two 200-h.p., 360 r.p.m., E-M Synchronous Motors at the Frank Smith Paper Company, Middletown, Ohio

An important factor in the famed smooth performance of E-M Motors is the E-M Automatic Starter. Synchronization is accomplished in the shortest possible time and with minimum current inrush and line disturbance. The essential element, the E-M field responsive control, is fully patented and found only on E-M equipment.

150-h.p., 360 r.p.m., E-M Synchronous Motor at the Keith Paper Co., Turners Falls, Mass.

Electric Machinery Mfg. Company

Specialists in Apparatus for Power Factor Improvement

1341 Tyler Street, N. E. Minneapolis, Minn.

EM *Synchronous* **MOTORS**

THE DEPENDABLE, ECONOMICAL DRIVE FOR JORDANS

(1008)

Bag Co., so that the new addition will increase the company's capacity to serve its general market by nearly 190 per cent.

The Don Valley Paper Mills, Ltd., Toronto, were closed down recently for a few days in order to facilitate the rebuilding of the beater room and the installation of a new drying system and other equipment.

G. W. Turk has been assigned to the central woods organization of the Abitibi Power and Paper Co. in order to establish a uniform system of woods accounting in the various woods divisions of the Abitibi company.

◆ BRITISH COLUMBIA ◆

B. C. Power Corp. May Proceed with Development

The British Columbia Power Corporation has been granted a certificate approving of the undertaking of the company with regard to the Campbell River power proposition, and allowing the company until February 28, 1931 to file its plans in this connection. This action settles the vexed question as to who should be allowed the right to proceed with the power development at Campbell River, the largest of its kind on Vancouver Island.

It is understood that one of the chief customers of the B. C. Power Corporation following establishment of its plant near Elk Falls on Campbell River, may be the Consolidated Mining and Smelting Corp., which in that event would undertake early construction of a smelter at the north end of Vancouver Island for the handling of coast ores. Another possible buyer of Campbell River power is the Crown Willamette Pulp and Paper Co., one of the largest manufactures of newsprint on the Pacific Coast, which has plans for a 1000-ton mill near that site, and which held the power rights there during the regime of the MacLean Government.

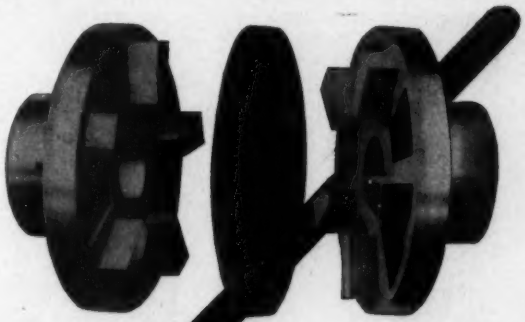
Powell River Co. Makes Gift for Research

Researches conducted at the University of British Columbia during the last year relative to problems in the paper and pulp industry have been so successful that the Powell River Co. has offered the board of governors the sum of $5,000 for the coming season to enable continuation of the work. The board has decided to accept the offer, noting with expressed satisfaction that the amount was almost double that contributed last year by the company for the same purpose.

The researches have been in bacteriology and biochemistry and have been directed by Professor Wilfred Sadler, head of the department of dairying and associated in the faculty of agriculture in collaboration with a number of the experts of the paper company at Powell River. The company anticipates further work, and under the direction of Professor Sadler will produce, in all probability, results of material benefit to the Pacific Coast newsprint industry.

The city council of New Westminster, in order to pave the way to the rebuilding on a larger scale of the plant of the Westminster Paper Mills, to replace the one destroyed by fire in July, has ratified an agreement which closes the street-end at the foot of Fifth Avenue. J. J. Herb, president of the company, is in the East, to interview the shareholders, and on his return it is understood that a new stock issue is contemplated to finance the erection of a new plant. Meanwhile, a financial statement is being prepared by Price, Waterhouse Co., Ltd., to show the exact position of the company as regards financial position, insurance, etc. As the amount of the bond issue was $165,000 and insurance is reported to have been carried to the extent of $300,000, the bondholders were fully protected.

The Sydney Roofing and Paper Co., of Vancouver and Victoria, had a large exhibit of Thermogen Mulch Paper at the 60th Annual Provincial Exhibition held at New West-



Wood's
FLEXIBLE
COUPLINGS

DRIVE RIGHT

Absorbs Destructive Strains Like a Sponge Absorbs Water

WHEN direct connecting your motor to its load, the simple precaution of using Wood's Flexible Couplings will save you many dollars in repairs and add years of life to your equipment.

These couplings protect both ends of your equipment the motor and the machinery it drives by absorbing the destructive vibration set up by the intermittently loaded machinery and the resulting power surges of the motor.

Note the construction of Wood's Flexible Couplings shown above, consisting of two cast iron flanges with lugs cast integral and a multi-ply specially constructed leather disc.

It is this disc that absorbs all the punishment saving your motor and machinery all wear and tear.

Only in Wood's Flexible Couplings do you get Wood's dependability.

T. B. Wood's Sons Company
Chambersburg, Penna.

Write for Descriptive Catalog

STOCKED FOR IMMEDIATE SHIPMENT

Vincent-Gilson Engr. Co., 30 Church St., New York, N. Y.; Law Sales & Engr. Co., 220 Mt. Hope, Rochester, N. Y.; A. H. Young, 1367 E. Sixth St., Cleveland, Ohio; D. B. McConnell, 216 Cos Terminal Bldg., Detroit, Mich.; The Nitrose Co., Peoria, Illinois; Ulrich Supply Co., 914 Central St., Kansas City, Mo.; Consulting Engineering Co., 313 Carson St., Pittsburgh, Pa.; Robinson, Cary and Sands Co., St. Paul, Minn.; Robt. M. Hartwell Co., 352 E. Second St., Los Angeles, Cal.; Day Sales Co., Monadnock Bldg., San Francisco, Cal.; C. L. Williamson, 303 Alaska Bldg., Seattle, Wash.; Beverage Supply Co., Ltd., 700 St. Paul St., West, Montreal P. Q. Can.; Roberto Colon, San Juan, Porto Rico.

When it stands up *here* it will stand up *anywhere*

With intense boiler heat behind it—ice and sleet in front of it—NITROSE wears from six to nine months on locomotive fronts, where paints last but a week * * * * Ten years in the field, in every type of industry, NITROSE has proved itself "the liquid armor that corrosion cannot eat."

The NITROSE Company
1500E PEORIA LIFE BLDG., PEORIA, ILL.

NITROSE

minster recently. The firm showed plants, both flowers and vegetables actually growing in beds topped with this mulch paper, and then samples of the product were also displayed. The background was provided by a massed display of mulch paper and other products of the firm.

There is every possibility that a pulp mill and sawmill may shortly be established at Crofton, on Osborne Bay, near Victoria, Vancouver Island. This property, amounting to 250 acres, was recently sold to Kenneth Watson of San Francisco and A. B. Watson of Victoria. Several large industries are to be established on the property. The first is a fish meal and fertilizer plant, which is now being incorporated as a provincial company with a capital of $200,000. As soon as this company is established the investors will consider establishing a sawmill and pulp plant on the site. The property has over 3,800 feet of water frontage, and as the site was formerly developed for smelter purposes, there is already a townsite on the area purchased.

Novel Plan for Transporting Mill Waste

Pulpwood mill waste is now to be utilized to advantage in British Columbia. In future, the mill waste from the Wood and English Mills, at Englewood, Vancouver Island, is to be sold at Port Townsend, Wash. A chipping device and a small hydroelectric plant have been installed at the Vancouver Island plant at a cost of $75,000. The plant will chip the logs and these chips will be conveyed in a fleet of six scows to Port Townsend.

The Vancouver Tugboat Co. is at present having six scows built at Vancouver and Prince Rupert to operate in this work. The firm is also having its tugboat Lorraine fitted with a new 225 h.p. internal combustion motor for use in towing these barges. This installation will make the tugboat the most powerful in the British Columbia coastal tug flee. Each of the six scows will carry 70,000 cubic feet of chips, and will commence service October 1st.

J. J. Harpell, president of the Institute of Industrial Arts, recently visited Powell River and Ocean Falls. Early last month he spent several days with the Minister of Education and officials of pulp and paper companies in the province, conferring on the subject of opening a branch of his educational work. The Institute is co-operating with the Canadian Pulp and Paper Association and is seeking to establish branches in various centers to encourage the study and development of the industry. Mr. Harpell has drawn up a tentative program which he submitted to school board and company officials in the plant towns visited. While no official decision, it is stated, has yet been made, company officials in the main are understood to be favorable to the project.

C. E. Braun has resigned as plant superintendent of Vancouver Kraft Mills, Port Mellon, Howe Sound, B. C., and a successor has not yet been named. Construction work is at a standstill as a result of a reported change in plans. The mill is owned by F. W. Leadbetter, who has extensive interests in pulp and paper projects in Washington and Oregon, and it is understood that a new statement of policy will be made by him when he returns to Vancouver. Delays have been caused by the non-arrival of digestors and other mechanical units from Germany and Sweden, and pending their receipt at Port Mellon the working force has been curtailed. High pressure boilers have been installed and it is expected that construction of the main plant will be resumed shortly.

◆ NEW BRUNSWICK ◆

International Paper Extends Timber Holdings

It is reported from St. John that the expected transfer of the lands of the New Brunswick Railway Co. in northwest New Brunswick to International Paper is to be consummated

A triple saving
in washing felts this way

THE three advantages that are gained from washing felts with a solution of Oakite, combine to make this a highly efficient and economical method.

First: Oakite's effective action is so quick-working that time is sure to be saved. Productive time of machines is increased.

Second: Every trace of foreign matter is removed and felts are left so clean and absorbent that washing is needed less frequently. The number of shut-downs required for this operation is reduced.

Third: With infrequent cleaning, wear and tear on felts is less. Replacement costs are lowered.

A card to us puts the help of our nearest Service Man at your disposal. Ask to have him call and furnish further interesting particulars. No obligation.

Manufactured only by
OAKITE PRODUCTS, INC., 16 A Thames St., NEW YORK, N. Y.

Oakite Service Men, cleaning specialists, are located at

Albany, N. Y.; Allentown, Pa.; *Atlanta, Altoona, Pa.; Baltimore, Battle Creek, Mich.; *Boston, Bridgeport, *Brooklyn, N. Y.; Buffalo, *Camden, N. J.; Charlotte, N. C.; Chattanooga, Tenn., *Chicago, *Cincinnati, *Cleveland, *Columbus, O.; *Dallas, *Davenport, *Dayton, O.; Decatur, Ill., *Denver, Des Moines, *Detroit, Erie, Pa.; Fall River, Mass.; Flint, Mich.; Fresno, Cal.; *Grand Rapids, Mich.; Harrisburg, Pa.; Hartford, *Houston, Texas; *Indianapolis, *Jacksonville, Fla.; *Kansas City, Mo.; *Los Angeles, Louisville, Ky.; Madison, Wis.; *Memphis, Tenn.; *Milwaukee, *Minneapolis, *Moline, Ill.; *Montreal, Newark, N. J.; Newburgh, N. Y.; New Haven, *New York, *Omaha, Neb.; *Oakland, Cal.; *Oklahoma City, Okla., Oshkosh, Wis.; *Philadelphia, Phoenix, Ariz.; *Pittsburgh, Pleasantville, N. Y.; Portland, Me.; *Portland, Ore.; Poughkeepsie, N. Y.; Providence, Reading, Pa.; Richmond, Va.; *Rochester, N. Y.; Rockford, Ill.; *Rock Island, Sacramento, Cal.; *San Francisco, *Seattle, South Bend, Ind.; Springfield, Mass.; *St. Louis, St. Paul, Syracuse, N. Y.; *Toledo, *Toronto, Trenton, *Tulsa, Okla., Utica, N. Y.; *Vancouver, B. C.; Williamsport, Pa., Wichita, Kans.; Worcester, Mass.

**Stocks of Oakite materials are carried in these cities.*

OAKITE
TRADE MARK REG. U.S. PAT. OFF.
Industrial Cleaning Materials and Methods

Four years ..... before the Civil War

THAT'S a long time ago. Few men alive remember those days. Yet, even then Shuler and Benninghofen were making Hamilton Felts.

Seventy years of experience are woven into every paper making felt that leaves our mills. It is the one asset, more than all the others, that makes a Hamilton a better felt.

Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

This experience which dictates the choice of the wools and the proper mixing of them, the method of combing and carding, of weaving and of fulling, assures felts with all the qualities you want—long life, economical cost, large water removing qualities, and good production of good paper.

The result is that with a Hamilton Felt on your machines you make paper at a lower cost. You remove more water and save in steam and coal. You get longer life and put up with less down time for washing. You produce a better and more uniform sheet with less broke. In other words, a Hamilton Felt makes money for you.

Try a single Hamilton Felt. Put it to any test you think a felt ought to undergo. Compare it with the results you have been getting. Then you will use Hamilton Felts on all your machines.

The Hamilton Felt man who calls on you can give you a Hamilton Felt which will fit your machines, stocks, and mill conditions perfectly. Ask him, or write to us direct.

Shuler and Benninghofen, Hamilton, Ohio

The Miami Woolen Mills
ESTABLISHED 1858

Hamilton Felts

in the near future. This will comprise one of the largest lumbering transactions in the history of the province, the property consisting of a large area in the counties of Madawaska, Victoria, Carleton and York, with a price said to be around $8,500,000. Heavy timber growths occur on these lands and it is understood that the transfer will include the soil rights.

Discussions as to the deal have been proceeding for some time, and it is believed that International Paper has had an option on the property which it now proposes to take up. If and when this is done, the company will have a vast area of timber lands in New Brunswick for the purpose of supplying its new mills in the province.

Investigate Intentions of Hollingsworth & Whitney

The St. Stephen board of trade has been investigating the intentions of Hollingsworth and Whitney, Inc., concerning establishment of a pulp and paper mill at St. Stephen. It is pointed that the company has expended about $70,000 in the St. Stephen area, chiefly in property acquisitions. Agents for the company purchased a number of properties to comprise the site for a projected pulp and paper mill on the St. Croix River. Nothing has been done toward building the mill, and the local organization has been reported as seeking to ascertain the intentions of the company.

In some quarters it is felt that the inability of Dexter P. Cooper, Inc. to secure an extension of the time limit for construction work on the Cooper tidal power plant may react unfavorably on the proposed St. Stephen mill. The proposed Hollingsworth and Whitney mill for St. Stephen was to be at tidewater, where there is an opportunity at this site to ship directly to the markets by water. The company owns large tracts of timber lands in New Brunswick and Nova Scotia.

Each of the paper machines to be installed in the new paper mill of International Paper Co., at Dalhousie, is to be equipped with a complete Harland drive. The transmission line that will transport current from Grand Falls to Dalhousie will be 110 miles long. The reception at Dalhousie will be in a high-tension outdoor substation. There will also be a main substation building.

❖ NOVA SCOTIA ❖

Mersey Paper Mill Nears Completion

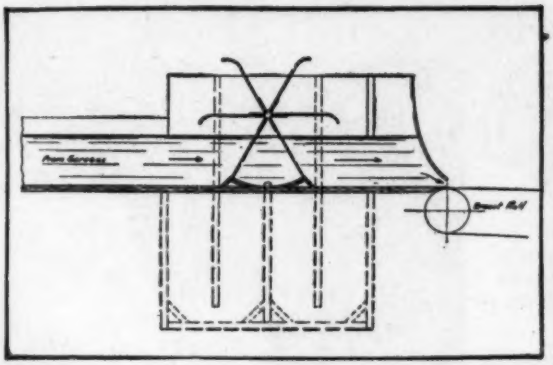
Work on the new mill of the Mersey Paper Co. at Brooklyn, N. S., is being rushed to early completion, and indications are that it will be ready for operation before the end of the year, the time specified in the company's agreement with the Nova Scotia Government. Gangs of engineers are at work installing all the necessary machinery and electrical equipment is being placed in position at the same time.

Active operations in Cape Breton by the company are forecast by the presence there of R. E. Dick, a company representative, who for some time has been searching plans and titles in the districts of Grand River, Mira, Framboise and Loch Lomond. In the early spring there will be an extensive survey in the districts named, not only on Crown lands, but over private timber rights which the company stands ready to buy up to consolidate its Cape Breton holdings. Surveyors under chief engineer Moulton have already been working about Grand River and Forchu, to ascertain the feasibility of opening up rivers and harbors for the moving of pulpwood. In other parts of the province the company is equally active in purchasing pulpwood.

Charles F. Tremaine, of Halifax, special referee in the Nova Scotia Supreme Court, has been receiving names, addresses and amount of bonds in the outstanding bonds of the Clyde and Sissiboo Pulp Co. This is in line with an order from the Provincial Supreme Court which directed the special referee to ascertain what bonds of the pulp firm are now outstanding, names and addresses of the holders, and the amounts due the holders.

THE TRIMBEY HEAD—BOX ELIMINATOR

Patents applied for U. S. and Canada



A simple and inexpensive device which does what paper machine builders have tried to do with cumbersome, slime gathering baffles and passages; gives an even sheet across the wire.

No "Eddies" or cross currents can possibly travel from screens to slice; All are effectively smoothed out by slowly moving blades which extend entirely across the pond.

Eliminator rotated by the current of the moving stock; speed only 2-3 r.p.m.

Flexible rubber tips prevent all "wave" as blades leave liquid.

Absolutely no variation in head behind slice.

Slime gathering surface reduced to minimum.

No dead corners for lumps and slugs to accumulate.

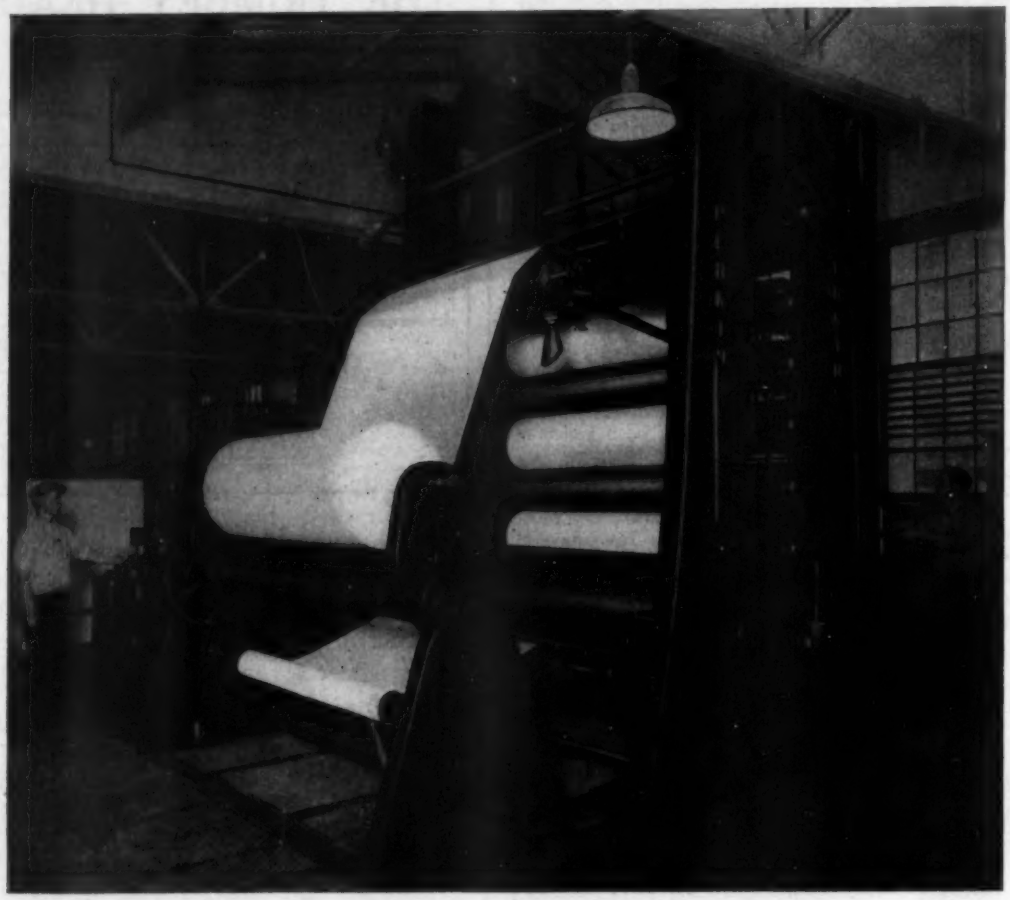
Can be installed in your present head box in a few hours.

ASK US

TRIMBEY MACHINE WORKS,
Glens Falls, N. Y.

Makers of
CONSISTENCY REGULATORS
PULP SCREENS
METERING SYSTEMS

"NO CALENDER CAN BE BETTER THAN THE ROLLS IN IT"



Perkins Roller Bearing Web Super-Calender

This Perkins seven-roll Web Super-Calender, operating in a mill in Ohio, has proved itself highly efficient in production, easy in operation and low in power consumption. The top and bottom rolls are fitted with ROLLER BEARINGS; the intermediate roll bearings are water cooled. The drive is direct connected, of the single motor dual frequency type.

Into this Roller Bearing Super-Calender Perkins engineers have built the rugged strength necessary for smooth, steady operation under the most severe working conditions. The calender, equipped with Perkins rolls, is effecting a definite saving and finishing paper in the best way this can be done.

B. F. Perkins & Son, Inc., Holyoke, Mass.

ENGINEERS and MANUFACTURERS

COTTON ROLLS
PAPER ROLLS
EMBOSSING ROLLS
CHILLED IRON ROLLS
GRANITE PRESS ROLLS
WEB SUPERCALENDERS
GLASSINE SUPERCALENDERS
FRICTION CALENDERS

TRADE MARK REG. U.S. PAT. OFF.

EMBOSSING CALENDERS
SHEET CALENDERS
PLATERS
MULLEN PAPER TESTERS
TENSILE TESTERS
VENTILATING FANS
RAG CUTTERS
STOCK CUTTERS
PAPER DAMPENERS
BLEACH EJECTORS

❖ MANITOBA ❖

It is reported that the Martin Paper Products Co. will commence the manufacture of corrugated and solid fiber paper boxes and other paper products at Winnipeg in the near future. The president of the new concern, John Martin, who formerly carried on the John Martin Paper Co., Ltd., with various branches in the West, was in Toronto recently and confirmed the report that his organization was contemplating such a move. The head office is to be in Winnipeg, and it is expected that the new plant will be in operation some time this month.

❖ ENGLAND ❖

Trade News Reports

An indication of the prosperous condition of the British paper industry may be obtained from a study of the import figures for the first seven months of this year, for although the paper trade ranks as one of the important industries of the country it relies on foreign countries for 80 per cent of its raw materials. Wood pulp, esparto, and rags have been imported to the extent of over 1,100,000 tons, an increase of 373,000 tons over last year's figures. This represents about 750,000 tons of paper, and at this rate there will be an increase of imports this year over those of last year to the extent of 1,300,000 tons on last year.

Our imports of manufactured paper have also increased in proportionate quantities. So far this year we have imported in paper of all kinds 554,700 tons. The biggest tonage this year from any one country has come from Canada which has sent a total tonnage of 82,250. This has reacted to the disadvantage of European makers, for the figures for all the Continental countries show a decrease.

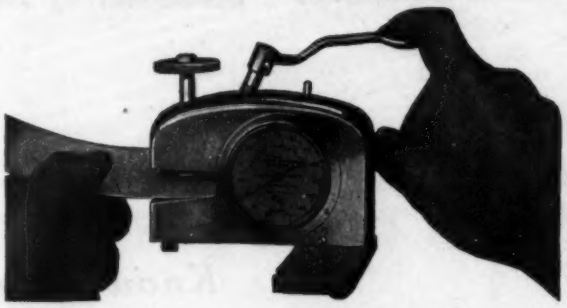
A recent report shows that with respect to the consumption of paper per head of population, the United States stands easily first with 152 lbs. per head. The next, however, is our own country with 90 lbs. per head per year, while in 1900 both countries were level with only 36 lbs. per head. Canada has reached a figure of 46 lbs. per head.

With the gradual reduction in the world's supply of timber suitable for conversion into wood pulp, and the probability that Canada will be hard put to supply the demands of the American continent, the work of the British Forestry Commission becomes of steadily increasing interest to British paper manufacturers. This body has planted 275,913 acres of woodland during the past nine years, and last year over 17,000 acres were added. The bulk of the trees planted were spruce and fir, so that supplies will be available from home sources in about twenty years from the time of planting. This means that outside sources will have to be depended upon until that time arrives, and it is expected that we shall just about be able to carry on until then, when the shortage problem will commence to become acute.

Report on Bamboo Pulp Survey

A report on the Bamboo Pulp Survey in Burma has just been published by the Office of the High Commissioner for India in London. This has been completed for Indian Forest Records by Mr. W. Raitt, officer in charge of the paper pulp section of the Forest Research Institute at Dehra Dun. The report raises the question of the commercial possibilities of supplementing the world supply of wood pulp by the use of bamboo in this direction. Mr. Raitt points out that the world's present consumption is about 15,000,000 tons per annum, of which 85 per cent is made from wood, and it is increasing at the rate of 25 per cent every ten years. Concurrently with this rapid growth in the use of pulp, there is a still more rapid expansion in the timber-using trades. In fact, Mr. Raitt states, the sawmill is a better market than the pulp mill.

ASHCROFT
PAPER TESTER



A mechanical instrument for quickly determining the bursting strength of paper. It enables the buyer and user to make an accurate test of any kind of paper. The bursting strength is indicated on the dial in pounds per square inch.

Don't be misled by the usual "tear" test. Two samples of paper which "seem" alike may vary from 5 to 10 pounds in strength on the Ashcroft Paper Tester. Every printer and user of paper should have one.

Price—$40.00.

Write for Catalog C-41

ASHCROFT PAPER
THICKNESS GAUGE

For measuring the thickness of paper, cardboard, blotting paper, rubber, felt, cloth and other thin sheet materials. Widely used for many years among printers, paper manufacturers and dealers.

An accurate, precision instrument reading to thousandths of an inch. In testing a coated enamel paper, for instance, the difference between 80 lb., 90 lb. and 100 lb. stock is immediately apparent.

Price—$15.00 . . . Special discounts to Jobbers.

Write for Catalog L-41

CONSOLIDATED ASHCROFT HANCOCK CO., INC.
Bridgeport, Conn.
Subsidiary of Manning, Maxwell & Moore, Inc.

AMERICAN
INSTRUMENTS
SINCE 1851

EXPERIENCE

Knowledge gained from over 50 years of making Wires for American and Foreign paper makers has led to the development of looms of our own design; wire drawn to specification in our own plant; skilled, experienced operators, and a product giving long and dependable service.

Appleton Wires
are good wires
APPLETON WIRE WORKS INC., APPLETON, WIS.

The report goes on to suggest that the present scarcity is already reflected in prices which for wood pulp are 5 per cent higher than 15 years ago, and for pulpwood are 300 per cent more than 40 years ago. The Forest Department in India has, during the past 15 years published numerous reports on the experiments made; but has refrained from seriously encouraging commercial exploitation until in a position to ascertain facts relative to quality, yield, growth, and cost of chemical treatment on a practical scale. These facts have now been furnished by the pulp and paper factory at Dehra Dun.

Mr. Raitt has given up twenty-five years to a search in various parts of the world for an alternative to wood pulp. He believes that a final solution to the problem will be found in the vast stores of the waste products, chiefly gramineae, of the forests and waste lands of the tropical and sub-tropical belt, and of these bamboo is the most important. There is a guarantee against exhaustion in that they are annually self-productive, and may be cropped every fifth or seventh year, instead of being, as in the case of wood, a 60-year crop. Although it is expected that early efforts will be confined to supplying the eastern and Australian markets, Mr. Raitt is convinced that bamboo can be produced at a cost which will permit its export to Europe. The report is printed on paper made in the paper pulp section at Dehra Dun from bamboo from the Arakan coast, and a sample of the pulp in its unbleached condition is given at the end of the book. The grades range from thin, strong brown paper (kraft) through all classes of printing and lithographic papers to high grade resin-sized writing paper.

In the report, Mr. Raitt discusses both capital and production costs, and comes to the conclusion that the production of unbleached pulp will reach an average cost of rupees 107. 14 annas per ton for factory costs and delivery to the marketing port, which for present purposes is assumed to be Calcutta.

England is at the present time suffering seriously from drought, owing to continuous absence of rainfall. One of the effects of this shortage of water has been a series of disastrous fires in all parts of the country. Two days before the despatch of this report, nine huge stocks of wood pulp, valued at three hundred thousand dollars were destroyed at a Sittingbourne (Kent) paper mill. After working for thirty hours in eight-hour shifts, ten fire brigades and a London County Council fire-float had failed to get the better of the fire. The conflagration broke out at Ridnan Dock, the inland port of the Sittingbourne Kemsley Paper Mills, owned by Edward Lloyd, Ltd. Beginning in one of the large stacks of wood pulp, of which large quantities had arrived from Scandinavia, and fanned by a strong wind, the flames spread rapidly, and soon ignited other huge stacks. The tide was out and the fire-fighters were seriously handicapped by lack of water, and it was not until the arrival of the L. C. C. float, which pumped water at a rate of 1,200 gallons per minute on to the burning stacks that any effect was noticed. Twelve stacks were involved and nine were completely burned out. Each stack contained 1,000 tons of pulp, and the loss is estimated at the figure quoted above. Edward Lloyd, Ltd. do not estimate that the fire will affect the running of the mills, nor hold up supplies of paper.

Walter L. Glass Joins Tolhurst Organization

The Tolhurst Machine Works, Troy, N. Y., manufacturers of the Tolhurst Centrifugal for fiber treatment in pulp and papermaking, announces that Walter L. Glass has been appointed manager of paper mill sales.

For the past four years Mr. Glass has been manager of the paper mill sales division of the B. F. Goodrich Rubber Co., Akron, Ohio. Previous to his connection with the Goodrich organization, he had several years experience in pulp and paper mill engineering and operation in the middle west and Canada.

Mr. Glass is a graduate of Syracuse University and is at the present time a member of both Canadian and American Technical Association of the Pulp and Paper Industry.

Felts That Live To A "Ripe Old Age"

Any felt that will last several days longer than the general run of felts saves a bit of expense worth consideration. And in the course of the year's production the saving becomes a factor of prime importance, — for money saved is profit made. . . .

Orr Felts, on a test with competing makes, averaged nine days longer service. Figure nine days more to the felt on your year's run, cut the figures in half if you will. Either way, the saving is important. Then call for an Orr representative.

A complete line — an Orr for every machine requirement

Orr Felt & Blanket Co.

Piqua, Ohio

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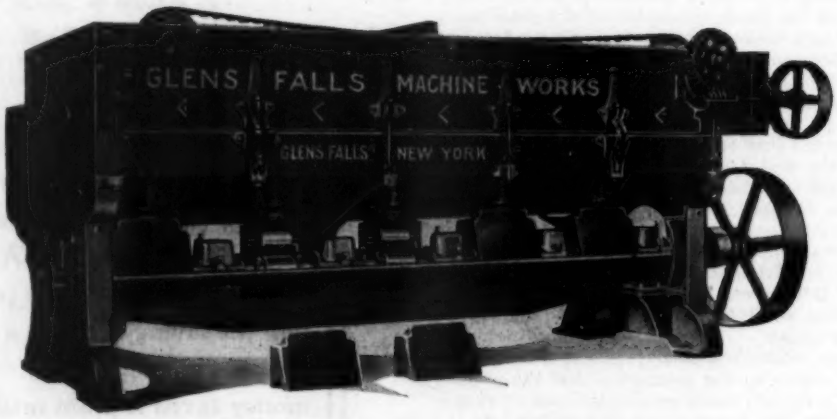

THE GLENS FALLS ROLLING ACTION FLAT SCREEN

Patent Applied for

No Clatter!

No Adjustment—Ever!

GLENS FALLS MACHINE WORKS

GLENS FALLS, NEW YORK

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E. K. Mansfield Co., 501 Fifth Ave., N. Y. C.
Eastern Representative

Western Representative
Geo. A. Frogner, 55 Second St.,
Portland, Ore.

See pages 344 and 345 in the 1929 Paper and Pulp Mill Catalogue

❖ NORTHERN NEW YORK ❖

St. Regis Issues New Stock

Holders of common stock of St. Regis Paper Co. have received rights valued at nearly $14,000,000 under a plan for reclassifying and increasing the company's common stock, recently approved by the board of directors and stockholders. This plan included changing the authorized 1,000,000 shares of no par value common stock into 4,000,000 shares of common stock of $10 par value each and increasing the authorized number of shares to 7,500,000 of $10 par value. At the same time, the preferred stock of the company which had one vote per share was given a voting power of four votes per share.

Of the increased common stock, the holders of common stock of record at the close of business Sept. 20, 1929, were offered the right to subscribe to an aggregate of 800,000 shares of the new common stock of the corporation at $25 a share. This was at the rate of one new share of stock for each share of old stock then held. Subscription warrants will expire at the close of business Oct. 21, 1929. All the 800,000 shares which may not be subscribed for by the holders of subscription warrants have been subscribed for by F. L. Carlisle & Co. at $25 a share. St. Regis Paper Co. will apply the $20,000 proceeds of the additional stock issue to the retirement of indebtedness incurred in connection with the acquisition of the business of the Bates Valve Bag Corporation and to increase working capital.

F. L. Carlisle, president of the company, in a letter to stockholders, presented a consolidated balance sheet of the company as of June 30, 1929, adjusted to give effect to the four-for-one split-up of common shares and the issuance of 800,000 additional shares at $25 a share. This shows current assets of $19,017,786, including $11,381,065 cash, against current liabilities of $2,101,701, a ratio of better than 9 to 1. Exclusive of $10,252,301 of funded debt, capital account shows $4,789,900 preferred stock and $40,000,000 capital stock outstanding with surplus of $25,504,407.

Investments of the company are carried on the balance sheet of $26,816,199. These include $4,102,266 shares of common stock and 1,025,566 class A option warrants for Niagara-Hudson Power Corporation, carried at $24,853,317 and having a market value as of Sept. 3 of $115,889,010. Directors of the company at their regular meeting on Sept. 4 declared the regular quarterly dividend of 75 cents a share on the no par common stock, payable Oct. 1, 1929, to stockholders of record Sept. 10.

J. Fred Amsden of Malone, engaged in the production and sale of pulpwood, has filed a complaint with the Interstate Commerce Commission seeking $10,000 reparation from the railroads on shipments of pulpwood from Canada and northern United States to Brownville, Fulton, Boonville, Port Leyden, Lyons Falls and Potsdam. Reparation was sought on shipments moving during the past two years, and upon any moving pending the commission's decision on the complaint. The present freight rates on pulpwood were said to be unjust and unreasonable and reasonable rates for the future were asked.

A paper material and hood cover made from paper for use on bottle tops, invented by Wilbur L. Wright of Fulton, has been patented by the United States Patent Office on an application filed almost six years ago. Wright has assigned his rights in the invention to the Oswego Falls Corporation of Fulton.

The boiler room of the Unity Paper Co.'s plant at Potsdam was damaged by fire on September 12. The Potsdam fire department assisted mill employees in extinguishing the fire.

Harry Rockwood of Carthage has retired as superintendent of the Champion Paper Co. plant at Carthage. He has purchased a farm near Great Bend.

RYERSON

Immediate Shipment from Stock

Bars, Shapes, Structurals, Rails, Plates, Sheets, Rivets, Bolts, Nails, Wire, Chain, Turnbuckles, Shafting, Boiler Tubes, Boiler Fittings, Corrugated Sheets, Concrete Reinforcing, Welding Rods, Babbitt Metal, Tool Steel, Bar Iron, Refined Iron, Floor Plates, Safety Treads, Small Tools, Machine Tools, etc.

Write for the Journal and Stock List—the "key" to Immediate Steel.

JOSEPH T. RYERSON & SON INC.

Chicago Milwaukee Buffalo St. Louis New York Cincinnati Boston Detroit

STEEL

Simonds Circular Paper Slitters

Edge-holding—that explains why mills in every section are turning to SIMONDS for the Circular Slitters that give them better work and more production. Simonds Slitters are true to form and perfect mechanically.

Order them from any Simonds factory or service station.

Simonds Saw and Steel Company

ESTABLISHED 1832—FITCHBURG, MASS.

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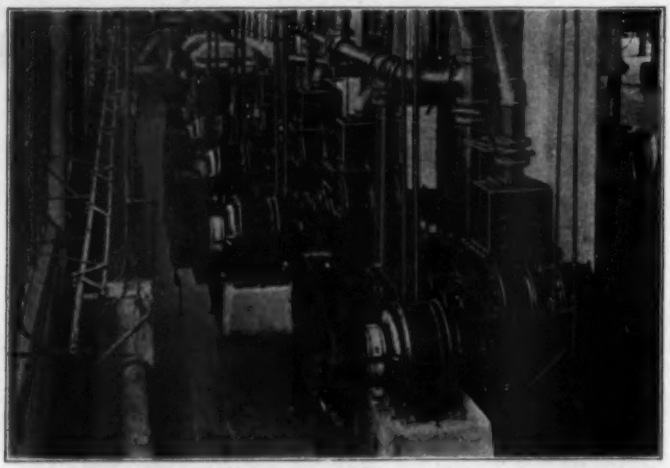

Positive Suction Produces Satisfactory Results at K.V.P.

The operators in paper mills, as in other industries want equipment which they can depend upon to produce positive results with the least operating and maintenance expense.

That is the kind of service The Kalamazoo Vegetable Parchment Company is obtaining through the use of Connersville Cycloidal Vacuum Pumps, which pull a positive suction on the rolls, flat boxes, driers, felt conditioners and filters.

Bulletin 20B describes the Connersville Pumps.

The Connersville Blower Company
Kentucky Ave. at 16th St.
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CONNERSVILLE
Blowers: Gas Pumps: Meters: Cycloidal Pumps

Lindsay Spiral Weave Fourdrinier Wires
(Patented Oct. 1927)

Represent the latest idea in paper machine wire cloth.

They prevent grooving of Suction Boxes, scoring and filling up of seams. This overcomes the necessity of planing the suction box covers and adds to the life and tonnage of the wires.

Lindsay Wire Weaving Company
Collinwood Station CLEVELAND, OHIO

National Paper Products Buys West End Paper

Announcement has been made of the sale of the West End Paper Co. of Carthage to the National Paper Products Co., which is controlled by the Crown-Zellerbach interests of San Francisco. Stockolders of the West End Co. unanimously approved the sale at a meeting held in Watertown on September 20. The price paid for the property was not disclosed. Transfer of the property was scheduled for October 7. The matter of ratification of the sale was only one of form, holders of the bulk of the stock having agreed to the sale when it was negotiated.

Among those present at the meeting of stockholders of the West End Co. were Samuel B. Wardwell, president and general manager; J. Cooper Stebbins, vice president; Robert J. Buck and Charles H. Anthony who held proxies from other stockholders. Attorney Loren E. Harter of Watertown appeared for the West End Co. and the Wardwells, holders of a large block of the stock.

From the time the West End mill at Carthage was first put into operation in the fall of 1902 to 1925 it was devoted to the manufacture of newsprint, producing about 40 tons a day. Since 1925 it has produced specialties. The National Paper Products Co. plans to change to the production of crepe tissues used for towelling and similar products, and will make extensive alterations and expansions to suit the requirements of its business. It is proposed to enlarge the machine room to accommodate another papermaking machine, doubling and probably tripling the capacity of the mill for tissue.

The output along with that of the National Paper Products Co.'s present Carthage mill, will be used in the Carthage factory in the manufacture of the several tissue products which the company markets. It is expected that the alterations and additions will be finished by early spring. The property at present consists of 21 separate buildings located on about 15 acres of land. About 120 men have been employed in the mill.

Six lake type ships, which were recently sold to Joseph F. O'Boyle of New York by the United States Shipping Board for $191,500 will be placed in the St. Lawrence river pulpwood trade running from Canadian to American points next year. The vessels have been laid up for the past eight years.

Thousands of dollars will be saved to paper manufacturers in Northern New York as a result of new freight rates recommended by the Interstate Commerce Commission on southern clay shipped from Georgia and South Carolina to all parts of northern New York. Joseph A. Quinlan, who represented the St. Regis Paper Co., Taggart Brothers Corporation and Harrisville Paper Corporation, has received a communication from the commission including the reductions recommended. The Watertown rate, which was $9.13 per ton when the case was started three years ago, will be reduced to $6.70 per ton. This rate affects mills at Watertown, Deferiet, Black River, Felts Mills and Carthage. Harrisville will pay $6.85 per ton and the Norwood mills $7.10 a ton. All others in Northern New York will get a reduction according to a mileage basis. The commission has also recommended a reduction in the freight rates on imported clay.

For the first time in several years logs have been floated down the Black River to the National Paper Products Co. at Carthage. About 2,000 cords of wood have been received at the plant. The wood was purchased two years ago but low water delayed delivery until this summer.

George E. Mayor of Potsdam has received patents on his inventions for improvement of pulp preparing machines. One of the devices is a pulp feed regulator, while the other is a device for controlling the moisture content of pulp. He made application for both patents on Oct. 1, 1928, and received with the patent grants recognition of 27 patentable features of his inventions.

DAYTONS ARE SERVING A WIDESPREAD FIELD

—and serving in many ways!

A heavier furnish, faster beating, and a saving of power! These Dayton claims are proven by figures—and a widespread acceptance has resulted.

Recent orders for new Dayton High Speed Beaters: Six for Chemical Paper Mfg. Co., Holyoke, Mass.; four for Buckeye Cotton Oil Co., Memphis, Tenn.; one for Jos. Parker & Sons, New Haven, Conn.; three for Western Electric Co., Chicago, Ill.

Recent orders for rebuilding old beaters into Daytons; six for Orono Pulp & Paper Co.; six for Franklin Board & Paper Co.; two for Cheney Pulp & Paper Co.; two for Warren Mfg. Co.; other recent ones, too—wherever high speed production is the order!

Speeding the Manufacture of Paper — Rayon — Insulation

Dayton High Speed Beaters serve many different sorts of mills. For instance—in the manufacture of high grade papers at Chemical Paper Mfg. Co.; at Buckeye Cotton Oil Co. for cotton linters used in rayon making; for insulating paper at Western Electric Co.; and blotting paper at Jos. Parker & Sons.

What's your problem? Ask us. Surely we can help!

The Dayton Beater & Hoist Co., Dayton, Ohio

Eastern Representative, E. K. Mansfield Co., 501 Fifth Ave. New York City

Western Representative, F. H. Godfrey, 415 Lenora St., Seattle, Wash.

DAYTON High Speed Beaters

WOOD TANKS

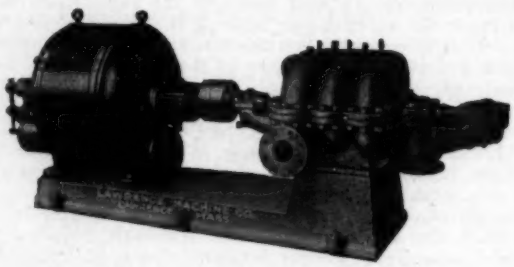
Made to Order

No tanks carried in stock—all tanks made to order for your special purpose.

We have been building tanks for over fifty years and have particular knowledge of paper mill men's requirements.

The Hauser-Stander Tank Co.
CINCINNATI, OHIO

"We Win With Quality"



LAWRENCE multi-stage high pressure pumps for boiler feed and water supply service, to meet all conditions where reliability and economical operation are an essential factor.

Our many years of experience designing and building pumps backed up by unlimited capital and modern facilities places us in the front rank as pump builders.

Some of our competitors try to imitate, but none can equal.

Write the Lawrence Machine Co., for complete details and prices. Free engineering service.

LAWRENCE MACHINE & PUMP CO.
LAWRENCE, MASS.

Manufacturer of "Lawrence" Pump, Centrifugal Pumping Machinery, Vertical Steam Engines, Contractors for Special Machinery

DANIELS P.P.P.

Light labor for engine and engineer

Shutdowns from packing failures are a waste of time, energy and money.

P.P.P. is the Perfect Piston Packing. Give us diameter of rod, diameter and depth of box, and we will send without cost enough P.P.P. to convince you. The higher the pressures, the better the proof.

QUAKER CITY RUBBER CO.
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GUARD YOUR LAMPS

FLEXCO-LOK

Unauthorized removal of lamps is annoying and expensive. Breakage is dangerous. Makeshift reflectors are risky.

Safety and economy recommend these efficient inexpensive guards to you. Hundreds of plants have standardized on them.

Flexco-Lok close with key. Flexco with screw driver. Tin-finished steel in sizes to protect lamps up to 200 watt.

Examine a sample

A sample mill type or 60 watt guard will be sent gladly without cost on letter head request. Give socket diameter.

Stocked by Supply Houses.

FLEXIBLE STEEL LACING COMPANY
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FLEXCO

Portable Guards

Made with split wooden handles and handle lock. Applied in a few seconds. Adjustable hook. Durable, safe, inexpensive. (Not sampled.)

ROEPER TRAVELING CRANES

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Floor or Cage Controlled

We specialize in cranes up to 10 tons capacity and can offer quick shipments

ROEPER CRANE & HOIST WORKS, Inc.
1724 North 10th St., Reading, Pa.

NEW ENGLAND

I. P. & P. Co. Sells Newspaper Stock

The International Paper Company, a subsidiary of the International Paper and Power Company, which acquired in January 50 per cent, or 10,248 shares, of the capital stock of the Boston Publishing Company, sponsors of the Boston Herald and Boston Traveler, has sold all this stock to a group of bankers acting with the present management of those papers. It is understood that the International Paper Company received $7,000,000 for its holdings, giving the International interests a profit of $1,500,000 on the original investment. The agreement was made on Sept. 30.

Although the acquirement of the holdings of the International Paper Company was made in January, the announcement was not made until April. There was considerable discussion of the matter and both the Massachusetts Legislature and the Federal Trade Commission conducted investigations. Many other publications commented on the ownership in the Herald and Traveler by a newsprint company having public utility affiliations. That a further outlet was needed for its product was the reason given by the International Paper Company for its purchase, and it also regarded the Herald-Traveler as a good investment. It is said that immediately after the purchase, the directors of the publishing company contracted for 30,000 tons of newsprint from the International Paper Company, covering 1929 requirements.

A special commission created by the Massachusetts legislature to investigate the conduct and control of public utilities in the commonwealth has sent out a questionnaire to all newspaper publishing companies in Massachusetts requesting them to send a list of their stockholders to the commission. The questionnaires are to be answered not later than October 10.

The du Pont Viscoloid Company, a subsidiary of E. I. du Pont de Nemours & Co., Wilmington, Del., with mill at Leominster, Mass., for the manufacture of transparent sheeting materials, is arranging an expansion and improvement program for large increases in present capacity. The work will include the construction of additional buildings and installation of equipment, understood to cost nearly $1,000,000.

The Marvellum Co., Holyoke, Mass., is now using approximately all the space in the former Whitmore Manufacturing Company's building. The concern has installed another machine for marbling effects that characterize its papers. The new machine is considerably larger than the old one, printing sheets up to 46 inches wide and supplements the work of the other machine. This method of printing was formerly employed only on linings, end sheets, envelope linings, box cover papers, card mounts, etc., but it is now being extended to silks and other cloths.

Henry C. Reimer has resigned his position as color expert and beater man at the Groveton Paper Company, Inc., Groveton, N. H., to take a similar one with the Hawley Pulp and Paper Company, Oregon City, Ore.

Groveton Paper Entertains Visitors

The Groveton Paper Co., Inc., Groveton, N. H., entertained twelve representatives from the Globe Paper Co., Inc., and the Howard Paper Co., Inc., both of 10 High street, Boston, Mass., from September 28 to 30 inclusive. The hosts sent their own cars for the guests who left Boston at 11:30 Saturday morning. They were accompanied to Groveton and also on the return trip by General Manager Edward MacDonald. The party was entertained at dinners and luncheons at several hotels of Groveton and vicinity. The program included a visit to the plant of the company which is fairly busy. The guests were accompanied by some 20 executives. The concern is making tremendous strides in the improvement of the plant, concerning which the visitors are very enthusiastic. At the business sessions, Mr. MacDonald presided. Treasurer Frank E. Moses gave a talk on the Groveton Paper Company and its organization. Mr. MacDonald reviewed what the

1,000,000,000

In 38 years of design and manufacture of water filters and softeners, Hungerford & Terry have installed an aggregate daily capacity of more than one billion gallons.

This experience has enabled them to aid paper and other manufacturers to improve their products and reduce their costs of production by the proper treatment of that important material—water.

Is your water supply properly protected to insure highly efficient mill operation and the highest quality in your product? Hungerford & Terry Engineers will investigate your conditions and report to you fully without obligation.

HUNGERFORD & TERRY
INC.
CLAYTON, N. J.

Clean Pipe Lines All of the Time

Slimy pipe lines mean dirty paper and consequently —waste.

It is easy to avoid this trouble with the Hayton Go-Devil. This instrument cleans pipe lines mechanically with no trouble and in a short time. Just insert the Go-Devil in the pipe, turn on the fresh water and out the other end comes all of the slime.

The propeller-like blades of the Go-Devil revolve against the pipe walls scraping off the fungus, leaving a clean line. By means of a strong flexible spring the bends are negotiated with ease.

We will gladly furnish any further information you may desire

HAYTON PUMP AND BLOWER CO.
Appleton, Wisconsin

HEAT RESISTANT

PIONEERS SINCE 1863 IN THE MANUFACTURE OF PAPER MILL AND WOOD PULP MACHINERY

HOLYOKE Cotton and Paper Rolls are precision rolls. Not theoretically so—but actually. The result is a higher quality paper of whatever grade you are running, — uniform in finish throughout. HOLYOKE Engineering is the reason for HOLYOKE'S leadership for the past 65 years.

THE ability of HOLYOKE Rolls to resist friction heat and other heat to which they may be subjected tends to lengthen the life of the rolls as well as to produce a better surface on whatever grade of paper you may be running through your calenders. UNIFORMITY, RESILIENCY, LONG LIFE, and HEAT RESISTANCE—these four outstanding qualities of HOLYOKE Rolls are the result of HOLYOKE Engineering skill and leadership since 1863.

Write HOLYOKE MACHINE CO., HOLYOKE, MASS., Manufacturers of Super Calenders, Platers, Cotton and Paper Rolls, Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors.

The HOLYOKE MACHINE COMPANY

FOUNDED 1863

guests saw in the mills, giving a technical story in regard to the products and what the company was in a position to make. The head chemist, Raymond Barton, discussed the laboratory and research work of the organization. Sunday afternoon the golf players were guests at the Colebrook Country Club and those of the party who did not play golf were taken through the Dixville Notch. The visitors returned to Boston Sunday afternoon.

Benton Mills, of Dumas & Co., printers and rulers, Lowell, Mass., Charles Mills, of the Courier-Citizen, Lowell, and a representative of the Globe Paper Co., Boston, were entertained September 24 and 25 by the Valley Paper Co., Holyoke, Mass. The program included a trip through the mill of the company, in which all the details of manufacture of their paper were explained. Another feature of the visit was an entertainment at the Mt. Tom Country Club by the Valley Paper Co.

A. W. P. Co. Holds Interesting Meetings

Two meetings were held last month under the auspices of the American Writing Paper Company at Holyoke.

A two-day conference took place September 6 and 7 with approximately 25 salesmen from all over the country in attendance. Business sessions were held at the offices of the company with luncheons and dinners at the Hotel Nonotuck. President S. L. Willson of the company, gave an address at the first session, September 6, mentioning the policy of the company in creating quality standards. He emphasized the importance of possession of detailed knowledge of the products of the company on the part of every salesman. President Willson also stressed the desirability of enthusiasm. In the evening the salesmen and their hosts went to "World's End," a pleasure resort on Wilbraham Mountain. Saturday evening the salesmen were entertained by the executives of the company on a trip to Old Lyme, Ct. The party went on a chartered private yacht from Middletown to Old Lyme and return. Dinner was served at Ferry Tavern.

The Eagle-A Service House meeting was held at the Hotel Nonotuck September 9 and 10. All of the agents who arrived Sunday were entertained at a dinner Sunday evening on the roof of the hotel. The first business session took place there Septetmber 9. At this meeting, Russell S. Madden, general sales manager, presided, and Mr. Willson gave a talk similar to the one delivered to the salesmen. Miss Helen U. Kieley, chief chemist of the company, discussed her impressions of paper mills in Europe which she had visited during the summer. Mr. Madden led in a general discussion of market conditions. Luncheon was served on the Nonotuck roof. In the afternoon Fred Webster gave a talk on the utility of Eagle-A bonds. In the evening an original dinner was staged, with a three-ring circus as the entertainment. On the second day of the meeting there was a short business session after which all present visited the company's new laboratory which is equipped with all modern devices for testing raw materials and finished paper. This visit was followed by a motor trip to "The Orchards" at South Hadley, where the men played golf and the ladies bridge.

The Worth Paper Company Association, Mittineague, Mass., has put out a new color, Sudan, a warm mellow green, in its paper, Marlowe.

The A. L. Adams Paper Co., Baldwinsville, Mass., has been incorporated to manufacture crepe and other paper stocks. The capitalization is 50,000 shares of no par value. The company will take over and succeed to the organization of the same name, with mill at Baldwinsville, previously operated with Alva L. Adams as proprietor. Mr. Adams will be president of the new corporation. Catherine J. Adams, Templeton, Mass., is treasurer.

The United Paper Co., Inc., Woonsocket, R. I., has been incorporated with a capital of $250,000, to manufacture and deal in paper bags, boxes and other containers. I. I. and Abraham E. Goldstein, 527 Wood avenue, Woonsocket, are the incorporators. The latter is at the head of the company.

UPKEEP
-A
MEAN
WORD!

The valve you buy today works when first put in the line—but what will the score be at the end of a few years? How much time and material will it need to keep it on the job?

Davis Pressure Regulators are simple and sturdy—correctly designed for a lifetime of dependable action.

They stay on the job—as shown by records in thousands of plants—without the upkeep that makes operating men sweat and accountants sniff.

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G. M. DAVIS REGULATOR CO.
414 Milwaukee Avenue • Chicago, Illinois

Balanced Valve • Float Valve • Steam Trap • Back Pressure Valve • Stop and Check Valve • Exhaust Relief Valve • Non-Return Valve • Float Box with Control Valve • Butterfly Valve

DAVIS AUTOMATIC
VALVE SPECIALTIES

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THE GREATER STRENGTH
OF
POWELL VALVES

Fig. 102
Bronze "White Star"
Globe Valve

It is improved designs and patterns, careful foundry practice, generous metal proportions, rigid inspection and accurate testing that combine to give Greater Strength to Powell Valves.

Because of their Greater Strength, Powell Valves will better withstand the strains and distortions of pipe line service.

THE WM. POWELL CO.
2521-2531 SPRING GROVE AVE. . CINCINNATI, OHIO

PAPERMILL MACHINERY FOR SALE

One 72" Cameron Slitter and Rewinder Type 10—A-1 Condition for immediate delivery.
Parts of 120" Trim Board Machine Four 10 Plate Packer Screens. Complete six cylinder Wet End. Dryer Unit 36 dryers 48" diam. x 128" Face. Two Farrell stacks Calenders—One 7 and one 9 Roll 126" Face. Good condition. Can be had at once.
One 14" x 16" Brownell Variable Speed Engine Ready to Run.
One 1500 lb. Downingtown Iron Tub Beater. Practically new.
Two Sturtevant Blower Systems. Sizes 9 and 12.—Complete.
One—No. 2 Lanoye Pulper. Prompt delivery. In fine condition.
Parts of 80" trim paper machine. 14—36" diam. dryers. Calender Stack, Reel, Moore & White Double drum Rewinder—Good condition.

Send us your inquiries

GIBBS-BROWER COMPANY, Inc.
Paper and Pulp Mill Brokers
261 Broadway, New York City
OUR MOTTO—"Service First"

Sales Representative Wanted

For Centrifugal Pumping Equipment

Leading manufacturer of centrifugal pumps specializing in pumping equipment for paper mills desires active Sales Agent in Cincinnati to cover Miami River mills. Can offer complete line of centrifugal pumps to capable agent now established in Cincinnati. Arrangements on commission basis. Profitable account for capable representative. Address Box 166, The Paper Industry.

Bailey Meter Company

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Specializing in

Power Plant Metering Equipment

CRANES & HOISTS

MARIS Overhead Electric Cranes
MARIS Hand Cranes. All Types
MARIS Simplified Electric Hoist
MARIS Monorail Systems. Hand and Electric
MARIS Self-aligning Monorail Trolleys
MARIS Self-lubricating Chain Hoist

MARIS BROTHERS Inc.
5530 GRAYS AVE. PHILADELPHIA

Paper Mill Machinery

One No. 2 Bird Screen

Two Walpole Screens used only two years

One 156" Hamblet Duplex Cutter and Layboy, used very little

One 72" Kidder Slitter

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WANTED—Engineering draftsman with experience in pulp and paper mill equipment layout as well as structural steel and reinforced concrete design. Give details of past experience with names of employers, also ago, birth place, education, religion, and salary expected. Address Box 168, The Paper Industry.

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John S. Schumaker, formerly in charge of the efficiency organization at the S. D. Warren plant in Westbrook, Me., now of the Champion Fibre Company, Canton, N. C., gave a talk at the Westbrook Kiwanis Club September 17. Mr. Schumaker discussed in a non-technical way Humanics or Human Engineering, a work with which he has been identified in his connections with pulp and paper manufacturing plants.

Louis E. Vose, vice president of the Hollingsworth & Vose Company, entertained the office personnel of the Boston office and the East Walpole Mills, and heads of departments of the company, about 100 in all, at his beautiful home in Walpole on September 6. It was the occasion of the fifth annual corn roast and enjoyed to the utmost.

N. E. Division Supts. Discuss Timely Subjects

At the annual fall meeting of the Northeastern Division of the American Pulp and Paper Mill Superintendents Association, held at Bethel, Me., October 4 and 5, 1929, the following papers were read and discussed: "High Density Bleaching and Problems in Sulphite Cooking", C. W. Stewart; "Ground Wood Pulp", H. J. Desmond; "Paper Mill Operation", E. J. McDonnell; "The Use of Water in Paper Making", W. D. Sommerville; "Paper Inspection", Lawrence Parkman, and "Screening", Mr. Harlow.

The morning of the second day was devoted to visiting the paper mills at Rumford. In the evening the members attended a banquet after which Harry C. White of the General Electric Company spoke on the "Mysteries of Science", outlining the lives and achievements of such men as Edison and Steinmetz.

Warren Associates Hold Annual Meeting

Attended by merchants from every section of the United States and Canada and by Selwyn Robinson, representative of D. J. Ball, distributor of the Warren lines of paper at Auckland, New Zealand, the thirteenth annual meeting of the Warren Associates, composed of executives of the S. D. Warren Company and merchants handling the products of that company, was held at Poland Springs, Maine, Sept. 12 and 13. President Roger D. Smith, of the S. D. Warren Company, whose mills are at Cumberland Mills and Gardiner, Me., presided.

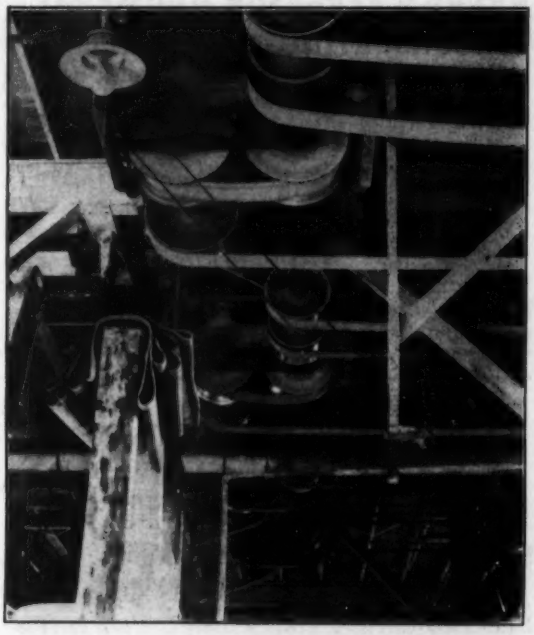
Features of the meeting included the presentation and discussion of advertising and sales programs for the coming year. Warren's new Estimator Book, which was presented, elicited a great deal of favorable comment and discussion. Sports, in which all took part, were a feature of the meeting.

Henry L. Harrington, former president and temporary receiver of the Berkshire Hills Paper Co., Adams, Mass., has filed a final account for allowance in the Superior Court of Massachusetts. The account allots to the First National Bank of Boston, largest common creditors, a final dividend of $3,359.87 on its claim of $582,299.98. Other common creditors are to receive dividends in the same proportion.

The American Reinforced Paper Co., Attleboro, Mass., has been taking bids on general contract for the construction of an addition to its mill, to be one story, brick and steel, 46 x 175 feet, understood to cost approximately $45,000, with equipment. Charles T. Main, 201 Devonshire street, Boston, Mass., is the architect and engineer.

The Dennison Manufacturing Company, Framingham, Mass., has opened its second Boston retail store at 143 Newbury street.

The National Blank Book Co., Riverside, in the vicinity of Holyoke, Mass., has let the contract for the construction of a five-story addition to its plant to the Casper Ranger Construction Company. The addition, costing approximately $100,000, will front the railroad tracks. The construction will be of brick, concrete and steel, with a floor space of 5,500 square feet on each floor. The fifth floor will be occupied by the printing department and the fourth floor by the research laboratory, the superintendent's office and the maintenance department.



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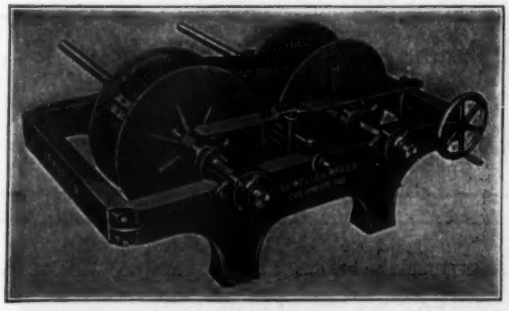

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OHIO

Miami Valley Superintendents Entertained

On Saturday, September 28, the Black-Clawson Company of Hamilton, Ohio, and the Shartle Brothers Machine Company of Middletown, Ohio, were hosts to the opening meeting of the 1929-30 season. The afternoon and evening was a succession of events at the Butler County Country Club, located between Hamilton and Middletown. Golf was the afternoon attraction, after which prizes were given for the best scores.

At seven o'clock a chicken dinner was served in the ball room which was especially decorated for the Superintendents occasion. During this period Mr. Louis Fries of Middletown sang several selections.

The business session was called to order at 7:45. W. W. Galloway, unfortunately in the eastern states at this time was unable to preside at the final meeting of his term as chairman. H. T. Randall, vice chairman, acted in Mr. Galloway's capacity.

Marshall Barker, secretary, read the minutes and financial status of the previous meeting held in May at Franklin, Ohio.

A letter from J. G. Ramsey, president of the National Association, to W. W. Galloway, chairman, was read. Mr. Ramsey sent regrets that he could not be present at the meeting and expressed his confidence in the Division and an appreciation for the good work it is doing.

The nominating committee presented to the membership the names of candidates for offices for the ensuing season. A motion was passed that the secretary cast a single ballot for the entire ticket, the result of which gave promises of interesting meetings. Those elected to assume offices are: H. T. Randall, chairman, The Champion Coated Paper Company; Marshall Barker, first vice chairman, The Beckett Paper Company; Royal H. G. Smith, second vice chairman, The Sorg Paper Company; Tom Harvey, third vice chairman, The Gardner & Harvey Company; Secretary to be appointed by the chairman.

When the brief business session came to a close the meeting was turned over to the hosts who had provided the best talent the valley possesses.

Mrs. Marjorie Hankinson Squires, radio singer, and formerly of the Metropolitan New York Symphony, gave several selections.

The Meyer Brothers Harmony Four of Middletown, Ohio, a colored quartette, entertained in their own varying style with a number of selections and negro spirituals.

Following the entertainment, Rev. Carl A. (Sunny) Sunberg, D. D., Pastor, Second Lutheran Church of Springfield, Ohio, spoke and kept his audience in a continual roar of laughter on the subject, "The Sense in Non-Sense."

On a motion by Mr. Robt. Eminger, seconded by Mr. Homer Ferguson, it was voted to hold the next meeting at the Hamilton Inn, Franklin, Ohio, Saturday, October 26.

Joseph E. Huston

Joseph E. Huston, secretary-treasurer of the Connersville Blower Company, Connersville, Indiana, passed away at his home in Connersville, September 22, 1929, at the age of sixty-seven years.

Mr. Huston had rounded out a business career of forty-two years in Connersville, and had been active in civic and church affairs for many years. In 1893 he was associated in founding the Connersville Blower Company, and had served continuously as its secretary and treasurer from the time of its founding until his death. He also was president of the Lincoln Manufacturing Company.

The deceased is survived by the widow and a son.

The Sullivan Machinery Company, Chicago, announces the appointment of Perry W. Olliver as manager of its San Francisco office to succeed the late Ray P. McGrath. Mr. Olliver has been a member of the Sullivan organization since 1914, having been associated with the El Paso office of the company for the past eight years.

Mr. Sutcliffe Returns to Home Office

John W. Sutcliffe, in charge of the foreign office of the Import Committee of the American Paper Industry, returned to the United States on S. S. **Berengaria** last week, after spending nearly a year in an investigation of papermaking conditions in all important European papermaking countries.

Although he is back in the United States primarily for a series of conferences with the staff at the home office of the Import Committee, arrangements are being made for him to visit the papermaking regions of this country and provide the American mills which are helping support the Import Committee with first-hand information as to conditions abroad.

Many of the mills requested such conferences, believing that they could improve their own knowledge of future marketing and manufacturing prospects in this country by a better knowledge of the situation abroad, and the potential competition both in this country and in America's export market.

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ON A CROSS-BELT CONE DRIVE
Four and a Half Years

ON the above drive rubber and camel hair belts *lasted from five to twenty months.*

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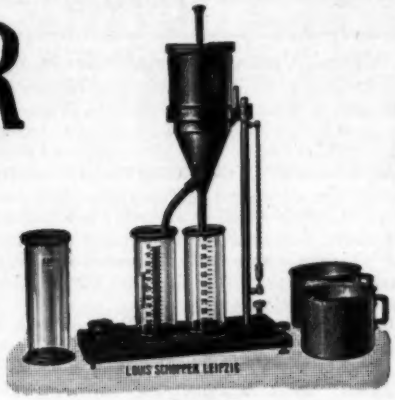

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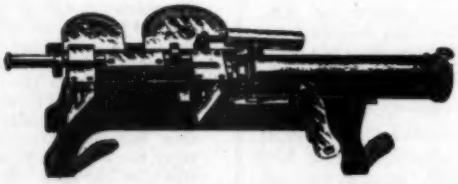
Uniformity of beating means better paper.

The Schopper Standard Desk Micrometer
Carried in stock—1/1000 of an inch for Boards, 1/2000 of an inch for Paper.

Schopper Folding Tester
The folding test has become standard for bonds, ledgers, and Kraft papers.

Schopper Strength and Stretch Tester

Small Piece Pocket Paper Scale
By weighing a piece 2 in. by 4 in., gives basis weight 25x38, 24x36, 22x34, 500 sheets.



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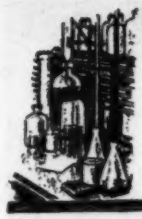


Technical Developments in the Paper Industry

Domestic and Foreign

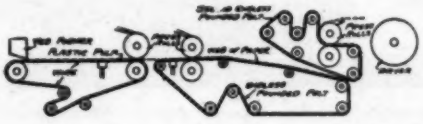
The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Digesting Cellulosic Materials

DIGESTION takes place in a digester under a pressure of several atmospheres with liquor previously heated to the digestion temperature. Two tanks are used; one serving for heating the digestion liquor to the proper temperature, while the other serves to collect the liquor from the digester. The heating is accomplished by passing the heating gases countercurrent to the flow of liquor. There is also provided a compressed gas container, the gas in this container being used to move the liquor back and forth from the digester into the tanks. Czechoslovakian Patent No. 28,065, C. B. Thorne.

Web Carrier for Papermaking Machine

THE web carrier is added to the papermaking machine in addition to the usual press rolls. Web-carrier rolls are also provided. As may be seen from the accompanying illustration, the web carrier consists of an endless felt of non-woven



pounded felt such as may be produced by fulling an endless belt of carded wool. The relation between this felt and the paper web is also seen from the figure. United States Patent No. 1,712,587. W. E. Sheehan, Albany, N. Y.

Change in the Nature of Sugars in Course of Sulphite Digestion

THE variations in the sugar content of the sulphite liquor are due essentially to two conditions: namely, the hydrolytic splitting action of the digestion acid, which itself depends on the concentration of hydrogen ions, and on the disintegrating and decomposing action of the digestion liquor on the dissolved sugars. This does not depend on the acidity of the liquor, but is related to the oxidizing action of the bisulphite ion, whose concentration is regulated by the lime content of the digestion liquor. As far as the aldoses are concerned, the oxidation leads to the formation of aldonic acids, which are present in considerable quantity in the waste liquor due to the high lime content of the same and the prolonged cooking of the wood. Erik Haegglund, and T. Johnson, Wochenblatt fuer Papierfabrikation, 1929, pages 353-5.

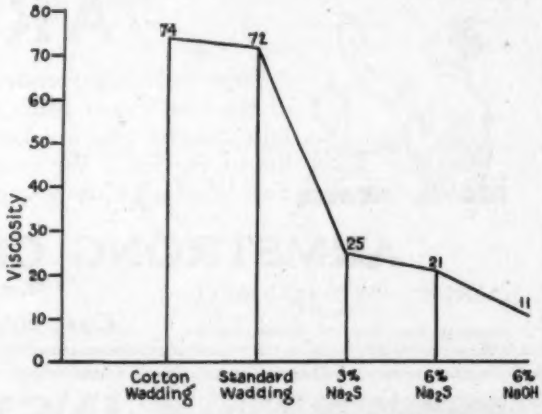
Discoloration of Paper

VARIOUS causes of the yellowing of white paper are outlined. Light, heat and air are the most important factors. Other causes mentioned are presence of lignones, presence of iron compounds in ferrous form, presence of resins, use of aniline dyestuffs which may favor yellowing and presence of straw pulp and also pulps which have been bleached before being thoroughly freed from incrustating substances. The effect of lignone in the pulp is discussed in detail. The presence of iron in the ferrous state is also an important factor. A test for iron in paper is outlined, both in the inorganic and organic state. It is pointed out that rosin is a material which must be taken into consideration whenever instances of yellow discoloration are to be determined in papers free from wood pulp and with a normal content of iron. It has been claimed that discoloration in paper free from wood is chiefly and commonly caused by rosin.

The investigation of the color change is also discussed. The problem is still unsolved since the chemical changes, which take place when yellow discoloration of the paper arises spontaneously, are extremely complex, and many different causes may produce the phenomena. The various methods which have been devised for this purpose are explained and criticized. Tests of ageing through heating in a chamber supplied with moist air from 50 to 95 degrees C. for periods varying, according to temperature, from 24 to 200 hours, give good results. The tests by ageing with heat are made in every case by comparing the sample with types of paper known to be resistant to the influences of time and temperature. Bollettino della Regia Stazione Sperimentale, 1929, number 2.

Pulp for Rayon Manufacture

TESTS were made to determine the comparative viscosity of different pulps dissolved in ammoniacal copper oxide solution to determine the influence of the digestion process on the disintegration of the particles of the dissolved pulp. The results obtained are shown in the accompanying illus-



tration in graphical form. The effect of treatment of the cotton cellulose with various digestive reagents is indicated. Treatment with sodium hydroxide and sodium sulphide reduces the viscosity of the ammoniacal copper oxide solutions. The size of the cellulose colloidal particles is reduced. With the same digestant, the size of the particles (or the degree of disintegration) varies directly as the technical yield. The finer the particles, the less the yield due to the loss of the fine particles in the waste liquor. As the yield decreases, the viscosity of the ammoniacal copper oxide solution decreases. It is pointed out that the higher temperatures of the soda and sulphate process in comparison with the lower temperatures of the sulphite process, and other conditions as well, render the former pulps less suitable for viscose manufacture than sulphite pulp. The bleaching of the pulp is also discussed and it is pointed out that every time the

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And experience has proven that synchronous motors are highly efficient for flat box service. The smaller sizes can be rated as the equals of high speed induction motors, neglecting belt losses. The larger sizes, 300 h.p. and more—even taking into consideration the power required by the motor driven exciter —are still more efficient.

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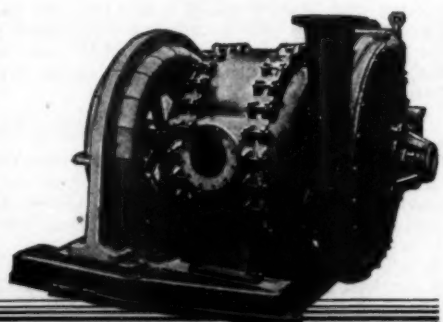

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oxycellulose content of the pulp is increased due to bleaching, the viscosity of the cellulose solution is reduced. Bumashnaja Promueschelіennostji through Zellstoff und Papier, 1929, 226-7.

Improvement in Treating Pulp

THE object of the improved process is to maintain the pulp, during the course of its treatment and at any moment therein, at the most favorable temperature as far as the constitution of the pulp colloid is concerned. The essential feature of the apparatus is a double-walled vat, which is used in the place of the ordinary beater, so that a heating fluid can be circulated through the double-walls so as to

Fig. 1

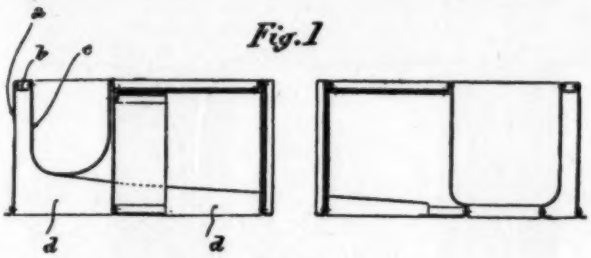
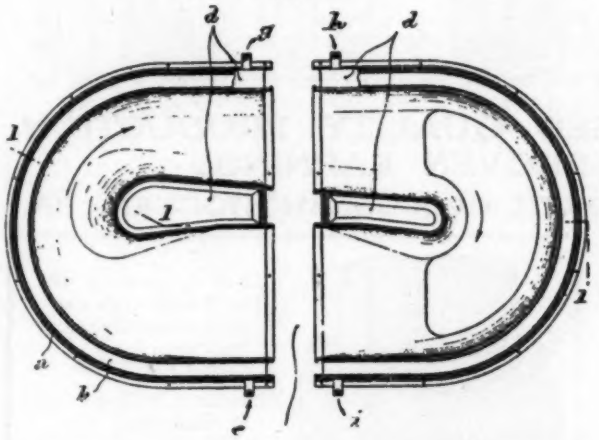


Fig. 2



maintain the proper temperature in the treated pulp. Controllers and receivers are used to automatically control the temperature and register it.

The vat (c) is riveted inside the vat (a) by means of gussets (b), the inner vat being preferably made of copper, while the outer one is made of iron. A heating fluid at any predetermined temperature can be circulated through (d) or a cooling fluid may also be circulated through it when the contents of the vat have to be cooled off. The various inlets and outlets for the cooling or heating fluids are shown at (e), (g), (h) and (i). Papeteries de Malaucene Societe Anonyme, French Patent No. 657,954, filed July 19, 1928.

Recovery of Soda Lyes from Delignification of Esparto

IN the autoclave treatment of these lyes the best clarification is obtained at a temperature of 350 degrees C and at a pressure exceeding 200 atmospheres. Under this treatment the lyes undergo a sort of "cracking", about eighty per cent of the original organic matter being converted into tar of high calorific value. No methanol is formed but acetic acid is obtained in amount approximately equal to that originally present. In general, treatment of the lyes subsequent to chlorination is uneconomical unless they are subjected to concentration. A systematic study was made of the influence of the maximum temperature reached and of the velocity of heating. C. Padovani and E. Salmoiraghi, Annali di Chimica Applicata, 1929, volume 19, pages 23-45.

Effect of Drying on the Strength of Paper

THE manner of drying and the duration of the drying process are important as far as the strength of the paper is concerned. Tests were made with hand-made papers made from sulphite pulp which was beaten in beaters to a beating degree of 37. The following methods of drying the paper were employed: The sample of paper was first dried between

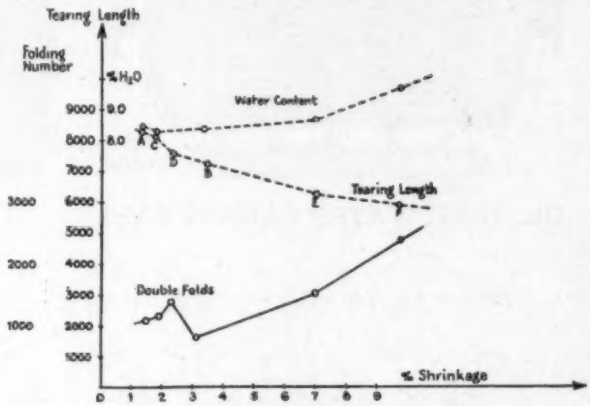


Figure 1

two sheets of cardboard on a stationary drying cylinder at 103 degrees C. In the second method, the sample of paper was placed between felts and weighted with a five kilogram lead plate and dried in a drying chamber at 80 degrees C. In the third method, the sample of paper was placed between two sheets of cardboard and dried for twelve hours in air and for six hours with heat. In the fourth method, the sample of paper was dried for eighteen hours in air on a sheet of cardboard. The fifth sample was dried for twelve hours in air between two felts and for six hours with heat. The last sample was dried after pressing for fifteen hours, completely exposed to air.

It was found that the tearing length of the samples dried according to these methods varied between 5800 to 8300. The

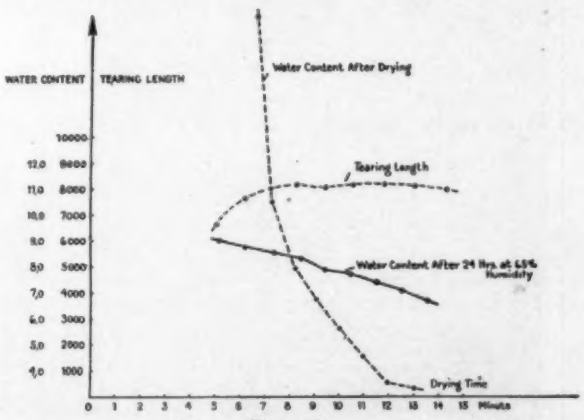


Figure 2

highest tearing length was obtained when the sample was dried according to the first method. The character of the substance on which the paper is dried is also important. Special tests were made to determine the effect of duration of drying on the drying cylinder on the strength of the paper.

The symbols (A), (B), (C), etc. in Fig. 1 correspond to the order of drying process described above. Fig. 2 shows the results obtained in drying the paper for various periods on a cylinder, consisting of a copper tube of 200 mm. diameter, the paper sample being placed between two sheets of cardboard and a felt and weighted with fifteen kilograms pressure. E. Rieth, Der Papierfabrikant, 1929, pages 385-7.

FARNSWORTH'S SUPER-DRYING SYSTEMS

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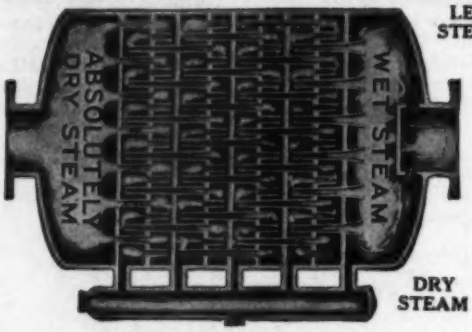
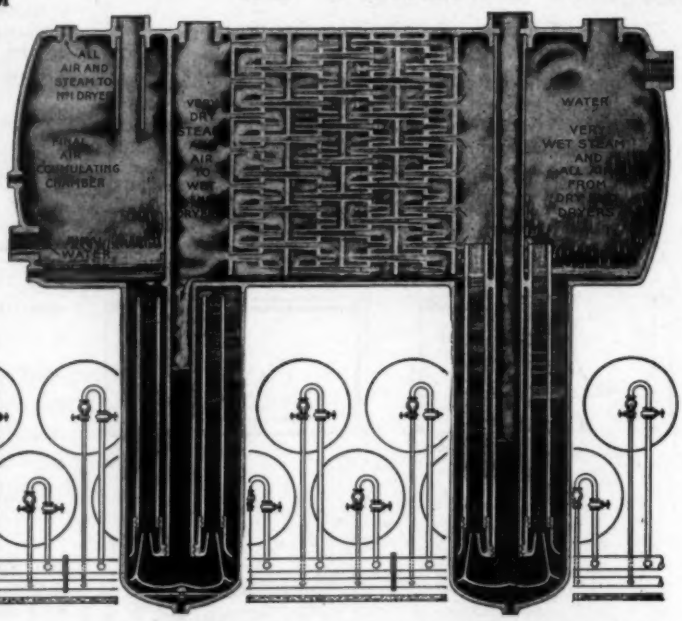


NO WORKING PARTS



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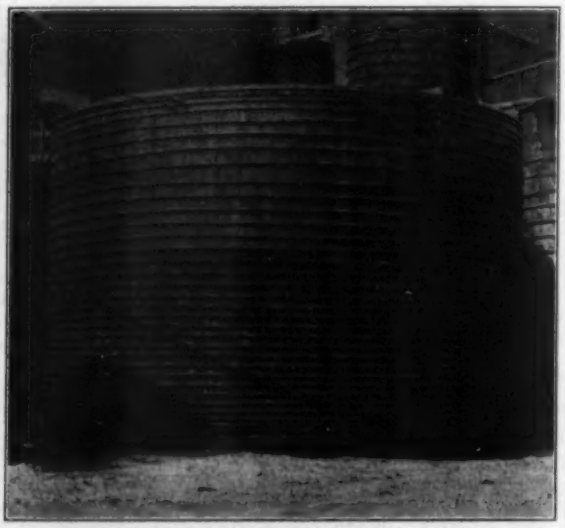

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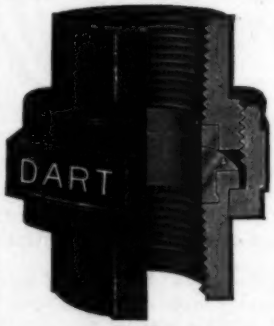

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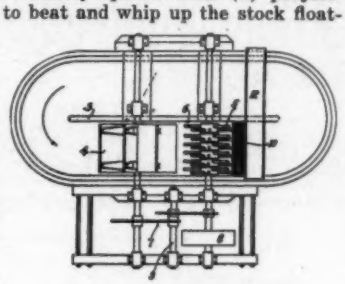
Beater

THE beater consists of the usual tub and midfeather (3). It is also provided with a propeller for causing the circulation of the water and of the stock, and also with a rotating whipping device. The latter consists of a hub (5) with a multiple series of radially spaced arms (6) projecting from it and adapted to beat and whip up the stock floating near or on the surface of the water in the tub and to project it above the normal level. An extracting trough (12) is mounted above the normal level, behind, and a short distance beyond the end of the arms of the whipping device. It is adapted to collect the water and stock projected by the whipping device and automatically deliver it outside of the tub. A fork-like separating rack (10) is interposed between the whipping device and the trough (12), and serves to prevent stock, which has not been reduced to the desired fineness from entering the trough (12). United States Patent No. 1,712,598. W. Werner, Hoosick Falls, N. Y., assignor, The Noble & Wood Machine Co.



Controlling Drying Cylinders on Paper Machine

THE feature of this system of control is that no more than two drying cylinders are controlled by the same motor. The frame (A) in Fig. 1 carries the bearings (A^1) in which the shaft (b^1) of the cylinder (B) rotates. A helicoidal gear (b^2) is mounted on the shaft (b^1), this gear

Fig. 1

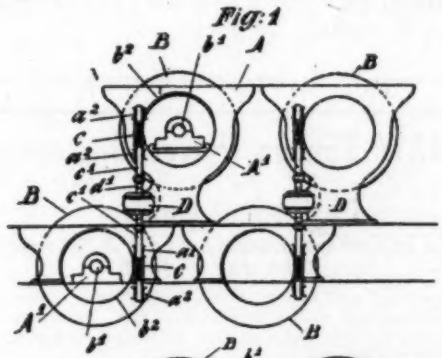


Fig. 2

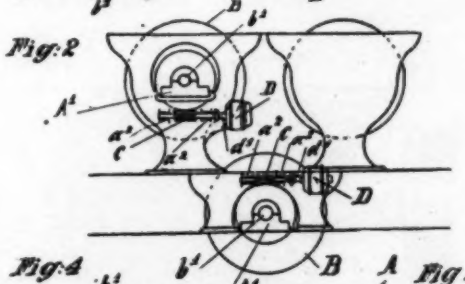


Fig. 4

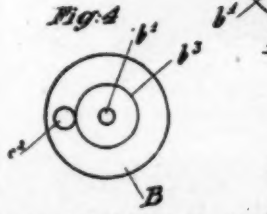
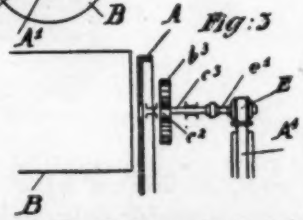


Fig. 3



meshing with an endless worm (C) which runs in the bearings (a^2). The endless worms (C) of the two cylinders located side by side or superposed are supported on the shafts (c^1), coupled with the shaft (d^1) of a motor (D) which is mounted on the framework (A).

The arrangement which is shown in Fig. 2 is featured by the fact that each cylinder is provided with its own motor.

Fig. 3 shows another method of carrying out the invention, which differs from the others, in that the transmission of motion from the motor to the cylinder is effected by a system of gears. The shaft (b^1) (see Fig. 4) of the cylinder (B) resting on the frame (A) carries a gear (b^3) meshing with the pinion (c^3). The pinion (c^3) is connected to the shaft (c^2) which is coupled to the shaft (e^1) of the motor (E). The motor (E) is fixed on a support or base (a^4). J. M. Voith Maschinenfabrik. French Patent No. 650,443.

Checking Thickness of Paper

LIGHT sensitive cells or mechanical or electro-magnetic means are used to detect the changes in the thickness of paper during its manufacture on the paper machine and with or without amplifiers or relays the means are used to adjust automatically either the speed of the machine or the valve of the stuff chest to maintain the correct thickness or weight of paper. An apparatus of this sort is shown in the accompanying illustration. The paper web (P) of Fig. 2 during manufacture passes beneath a source of light (23) backed by a reflector (26) and the light passing through the paper is focused by lenses (28) (29) on to a cell sensitive to light

FIG. 2

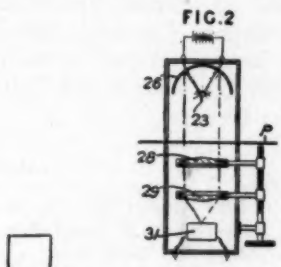


FIG. 1.

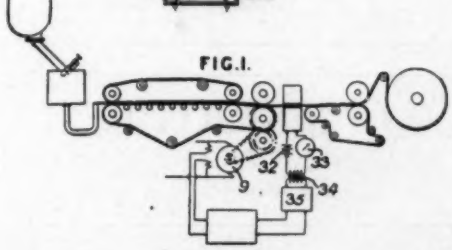
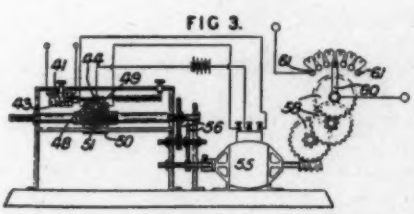


FIG 3.



rays, such as a selenium or photo-electric cell (31), which with a galvanometer (33) in Fig. 1 and transformer (34) is in the circuit of a battery (32). An amplifier (35) comprises a fixed solenoid (41) Fig. 3, and a core (43) carrying a roller or slide (44) insulated from it.

This roller normally rests between two contacts (48) and (49) on a block (50). Variation in the thickness or weight of the paper during manufacture moves the core (43), and the roller (44) makes contact with one or other of the contacts (48) and (49), thus completing the circuit of the motor (55), which, through gearing (58), moves a contact (60) over studs (61) of a rheostat in the shunt circuit of a motor (9) and adjusts the speed of the paper machine. The motor (55) through gearing (56), also rotates a screw (51) and this slides along the block (50) until the roller (44) is in the mid-position between the contacts (48) and (49), thus stopping the relay leaving the rheostat adjusted to the new position. Instead of the fixed coil (41) a moving coil may be

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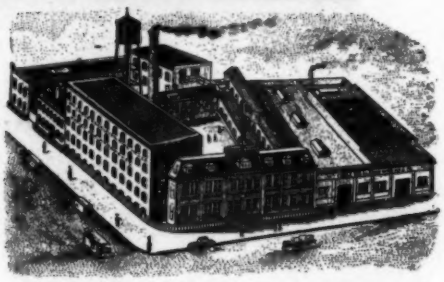

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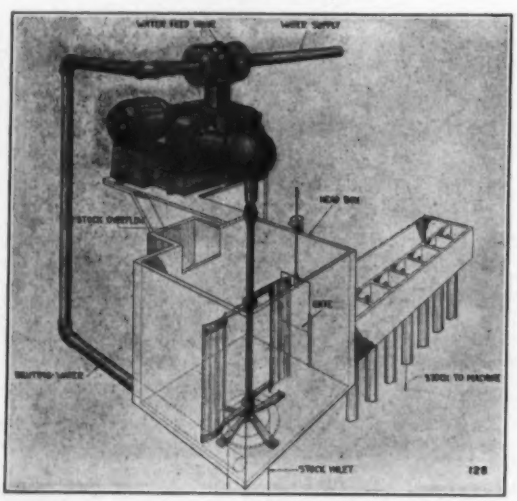

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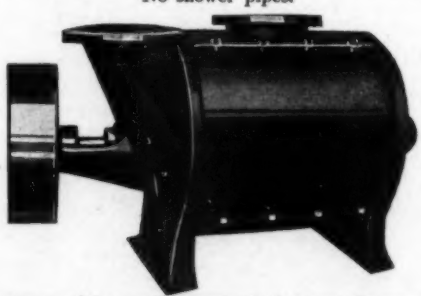

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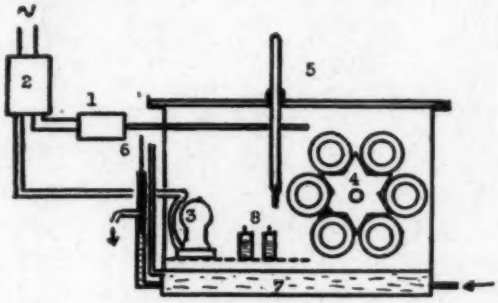
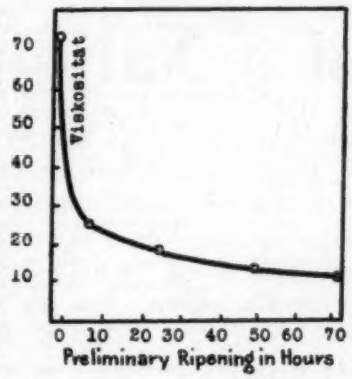
used and the motion of the coil may operate a dependent arm immersed in a liquid resistance in the circuit of the motor driving the papermaking machine. The motor (55) may be used to rotate the brushes of a variable speed alternating current motor which may be used in place of the motor (9). The relay may be used to operate an auxiliary stuff cock by which pulp is supplied to the paper machine. Where steam or internal combustion engines are used as prime movers, the motor (55) may be used to control steam or gas valves, governors, etc. The World's Paper Trade Review, 1929, 254.

Measuring the Viscosity of Pulp

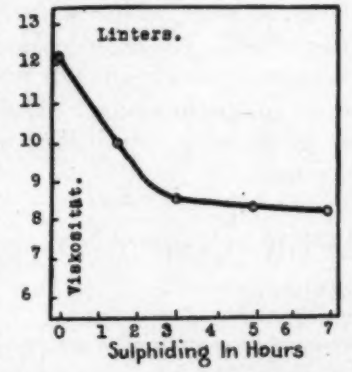
A SO-CALLED quick method for the measurement of the degree of fluidity of pulp is described as used in the



viscose rayon process. The test can be made after nine and one-half to ten hours. The pulp is cut into pieces approximately one square millimeter in size. Enough of the sample is weighed out so that 0.9 gram of absolute weight is obtained. The sample is then dipped at a temperature of 20 degrees C. into ten cubic centimeters of 17.5 per cent concentrated sodium hydroxide solution. The sample is then pressed out until it weighs three grams and this is sulphided in a rotating flask provided with ground-glass stopper, in which is contained 0.6 cc. of carbon disulphide.



The xanthogenate is then dissolved in 100 cc. of normal sodium hydroxide solution, and the viscosity is measured by means of an Ostwald viscosimeter. The duration of the various steps in the method are as follows; dipping two hours, pressing and weighing half an hour, sulphiding five hours, dissolving two hours and measuring the viscosity half an hour. All the operations are carried out at a temperature of 20 degrees C.



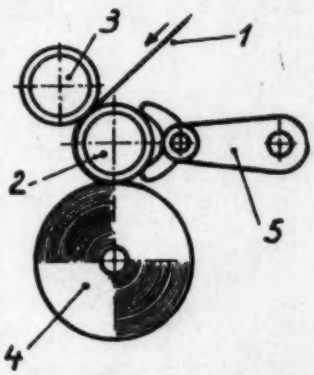
The sulphiding and dissolving flask is shown in Fig. 1. Contact for thermometer is shown at (1), the relay at (2), the incandescent lamp at (3), the sulphiding and dissolving drum with six flasks at (4), the thermometer at (5), the thermometer for taking the temperature of the water at (6), the double bottom cooled with water at (7) and the cellulose samples at (8). A. Kueng and E. Seger, Der Papierfabrikant, 1929, pages 433-36.

Sizing Experiments with Rosin Size Prepared Cold

SEVERAL large scale experiments were carried out in the Sokol mill in Russia on rosin size which had been prepared in the cold. It was found that a neutral size, which was prepared cold, gives better results and a paper of higher sizing quality than a size saponified at an elevated temperature and containing free rosin. Not only is the sizing quality of the paper improved by using the first type of rosin size, but the mechanical properties of the paper are also improved. This is manifested in part by a reduction of the ash content of the paper. The saving in rosin, on the assumption that the ash content of the sized paper remains the same, amounts to approximately nineteen per cent. It was not possible to establish that any saving was effected in the sulphate of alumina used, and this is also theoretically improbable, for when the saving in the use of rosin amounts to as much as twenty-five per cent, the quantity of alkali that is required to neutralize the size is about the same as that used when the size contains free rosin. G. Konopatzkij, Bumaschnaja Promischlennost, 1929, volume 7,967.

Roll Cutting Machine

IN the ordinary type of roll cutting machine supporting rollers are used for the knives. These rollers are ordinarily made of elastic material, such as gums, leather or paper, and are quite expensive. They make the cost of the operation too high. The new type of machine, which is seen in the accompanying illustration, is not equipped with these rollers. The slot knife roller contains one or more pairs of rings according to its length, of which the inner ring takes part in the rotation of the knife roller, while the outer ring, which surrounds it, can be rotated in the direction opposite to the rotation of the inner ring, in certain instances by the interposition of devices, such as metal bushings and ball bearings, which reduce the friction.



According to the illustration, the paper web is seen at (1) which passes between the slot knife roller (2) and the knife roller (3) and is finally wound up on the roll (4). The pressure device (5) supports the slot knife roller. Gobel A. G. German Patent No. 474,470.

The Rosin Sizing Theory

THE author carried out a number of experiments which yielded data which gave conclusions opposed to those of Oeman who subscribes to the theory that the fibers have the capacity of absorbing aluminum ions. The author's experiments led him to conclude that the sizing is independent of the acidity of the stock water and is affected by the free rosin, and that aluminum hydroxide rather adversely affects the sizing than improves it. He assigns great importance to aluminum resinate, aluminum hydroxide and free rosin in the sizing of paper. He also states that the free rosin and the absorbed aluminum ions, however, are not the sole agents concerned in the sizing of paper. If the rosin soap is split up by means of acid or very great excess of alum and the acidity thereafter determined by means of alkalies to be equal to pH values of 4.5 to 5.0, then a large proportion of the rosin is present in the free state. Nevertheless, aluminum hydroxide is also present, and this facilitates the adhesion of the rosin. The investigation does not, however, solve the problem whether free rosin or aluminum resinate is better for sizing paper. H. Roschier, Papp. och traevarutidskr. foer Finland, 1929, pages 304ff.

The Diary of a Nation

MANKIND, with ignorance of the darkened future, has always been careful to keep contact with its past. When the luxurious tombs of the Pharaohs were being hewn from the solid rocks of the Nile Valley, there developed in Central America a civilization with a high culture that went down under the heavy tread of the Spanish conquistadors. This people, on its feast years, erected stone memorials, cut with tools of stone, to keep a record of its social progress. Within recent years many of these tablets have been unearthed and their messages deciphered.

Only the Mayan rulers and priests could keep such a diary, and there was only one copy for the use of all. In this present day and age, millions of people keep a running story of their past—and there are millions of diary books for them to use. The one diary cut laboriously in stone has given way to millions made possible by generous quantities of paper.

HAMMERMILL PAPER COMPANY

Erie, Pennsylvania

New York, October 1, 1929.

DEMAND for paper has shown steady expansion since the termination of the summer and vacation season, and day by day the market is increasing in activity and developing a better all-around atmosphere. Buyers are manifesting greater interest and are backing up their interest in the commodity by placing more and larger orders; manufacturers and merchants in nearly every instance report a livelier market, and in practically all corners of the industry it is evident that the usual autumn stimulation of business is setting in and that mills and distributors are more busily engaged than for some while.

Not in a lengthy time has sentiment within the trade been quite so confident and optimistic. Paper producers and dealers, just about as a unit, are anticipating a brisk market during the remainder of the year. A broad and consistent demand for practically all classes of paper is looked for between now and the end of the pre-holiday season in December. And it must be said that there are numerous signs that these expectations will be realized. Consumers and converters now operating in the market show very clearly that they are absorbing supplies because they have need of them, that the buying being done is of a healthy character, and that the volume of purchasing indicates that consumption of paper of most kinds is sharply on the upturn, as ordinarily is the case at this period of the year. That this buying movement, now getting well under way, is due to increase, and the market extend in breadth, seems as positive as anything in business probabilities can be positive. It is apparent that paper consumption is rising at a fairly fast gait in many directions. Publishers and printers are feeling the fall improvement in business and are steadily increasing their consumption of paper; paper box manufacturers and bookbinders are using larger quantities of both board and paper; retail merchants are experiencing much better activity in their field and consequently are finding greater use of paper, and in various other consuming and converting lines the consumption of paper is mounting, thereby necessitating buyers acquiring larger supplies for current needs and also arranging for future requirements.

Bankers, economists, manufacturers and merchants are predicting a busy fall and winter period of business. There are indications that some branches of business which have not been so active for several years, owing, so it would seem, to the exceptional prosperity of other lines, are becoming more active, and the feeling exists that business is destined to be more diversified or more general than has been the case. For example, it is believed that larger demand is arising for furniture, household equipment and utensils and other products which have been feeling the effects of broad activity in automobiles and radios—that the consuming public is about due to let down to some extent in the purchase of motor cars and radios and devote more attention and capital to other commodities. This improvement in general business is expected to react in favor of the paper industry, because it is an acknowledged fact that the greater the breadth of business generally, the larger is the demand for paper. Moreover, there are signs that consumers and converters are carrying comparatively small stocks of paper, so that it is expected they will necessarily have to increase their purchasing operations in the market as their needs develop.

Paper manufacturers believe that as demand for their product undergoes the customary seasonal expansion it is likely prices of many classes of paper will be readjusted on more favorable levels. It is admitted freely that prevailing prices on some kinds of paper are not profitable to mills making the article, and it is felt in most quarters of the industry that only larger business can lead to a readjustment of market rates to where manufacturers will receive more remuneration for producing the very necessary commodity.

Production of paper in the United States showed a slight decrease in July as compared with the preceding month, according to statistics compiled by the American Paper and Pulp Association. A total of 554,047 tons of paper and board was produced in this country during July, contrasted with 557,746 tons in June of this year, and 495,272 tons in July last year, these figures being for identical mills. All grades excepting bag and wrapping paper registered increases in output in July over a year ago. The production of hanging paper gained 23 per cent, of tissue paper 22 per cent, of writing paper and paperboard 18 per cent, of felts and building paper 17 per cent, and of uncoated book paper 15 per cent. Shipments from mills in July aggregated 554,055 tons of all grades, which were in excess of the output during the month, and comparing with 554,593 tons shipped in the preceding month. July shipments were 10 per cent above those in the same month in 1928. Mill stocks of paper declined from 257,123 tons at the end of June to 253,400 tons at the end of July, representing a decline of one per cent, while stocks at the end of July were 8 per cent smaller than last year.

There was an increase in the production of newsprint in August as compared with the preceding month, according to the monthly statistical summary of the print paper industry issued by the News Print Service Bureau. During August, mills in the United States produced a total of 120,868 tons of newsprint, and shipped out 118,789 tons, contrasted with 111,578 tons produced and 112,616 tons shipped in July, while Canadian mills produced 225,873 tons and shipped 224,254 tons in August, against 229,045 tons manufactured and 227,502 tons shipped in July. Thus, the two countries produced a combined total of 346,741 tons in August, compared with 340,623 tons in the preceding month, and shipped out 343,043 tons, contrasted with 340,118 tons in July. During August, 22,758 tons of newsprint were made in Newfoundland and 1,544 tons in Mexico, so that the total North American production for the month amounted to 371,043 tons, against 364,333 tons in July. The Canadian mills produced 220,049 tons more newsprint in the first eight months of 1929 than in the same time last year, which was an increase of 14 per cent. The United States output was 14,612 tons or 2 per cent less than in the first eight months of 1928, while production in Newfoundland was 15,770 tons or 10 per cent larger, and in Mexico 1,975 tons more, making a total North American increase of 223,182 tons, or 8 per cent, over the same period last year. During August the Canadian mills operated at 80.5 per cent of rated capacity, United States mills at 79.8 per cent, and Newfoundland mills at 107 per cent. Stocks of newsprint at Canadian mills totaled 29,785 tons at the end of August, and at United States mills 25,656 tons, making a combined total of 55,441 tons, which was equivalent to 3.5 days' average production.

It is very evident from the New York City newspapers that consumption of newsprint is on the upswing. Publishers here are adding pages to their editions, and circulation is reported growing. A firm tone marks prices, and the statistical position of the print paper branch of the industry seems to be strengthening steadily. Wrapping paper is in excellent demand, and manufacturers are naming firm quotations while well fixed with orders. The call for fine papers is increasing, and mill prices display a hardening tendency with some slight revisions in an upward direction recorded on certain lines of bonds and ledgers. Tissue paper is moving freely and prices of some of the lower grades have been advanced a bit. Book paper demand is good and expanding, and there is considerable activity in the market for boxboards, for fancy papers and for glassine, parchment, greaseproof and other specialties.

The IMPORTANCE OF A QUALITY MARK

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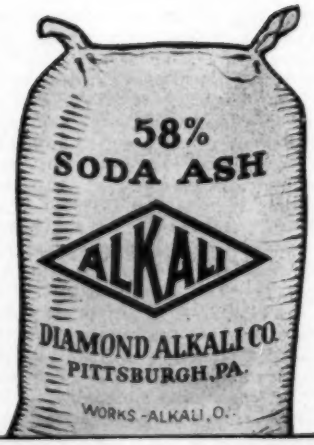

Diamond Alkali Company

PITTSBURGH, PENNA.

Papermaking Rags

It is quite evident that paper manufacturers are acquiring supplies of rag stock reservedly and that most of the current purchasing is to cover actual requirements, yet the needs of many mills have increased to a degree where most buyers have found it necessary to extend their operations in the market, with the result that business in rags is on a fairly broad scale and is showing steady expansion. This, of course, is something of a seasonal condition since it is customary for demand for rags to increase in the fall of the year as papermakers experience a larger call for their product and consequently require larger quantities of raw material.

The market neither is active nor quiet. Something of a middle course is being pursued by most buyers, and while there is a relatively good and expanding call for supplies, consumers are buying in a manner that fails to have much influence on ruling market values. At the same time, prices are steady to firm, and the slight changes that have been noted have been mostly in an upward direction with some grades displaying a decided inclination to rise. Dealers are putting much emphasis on the reported strong statistical position of most classes of rags for paper mills. Supplies, it is declared, are not coming in from production and collection sources in a normal way, and certain grades are said to be so scarce that it would not require much additional demand to cause market rates to hop, skip and jump upward. Moreover, dealers appreciate the possibilities of the market and are not pressing rags for sale. Instead they are quoting firmly on the stocks in hand and manifest little disposition to grant price concessions to procure orders, apparently being content to wait out the situation in the firm resolve that a broader market and more satisfactory prices are in store for them.

Despite reports to the effect that fine paper mills have proceeded cautiously recently in purchasing new cotton cuttings, quoted prices of these rags are well maintained except possibly in the case of several descriptions which are in relatively better supply than others. Dealers in New York are asking 10.75 to 11 cents per pound f.o.b. that city for No. 1 new white shirt cuttings, though sales have been reported at slightly less in some instances. Fancy shirt cuttings are held at 6.50 cents and higher a pound f.o.b. New York, unbleached muslins at 11 cents, light silesias at 8 cents, blue overall cuttings at 7.75 cents, O.D. khaki cuttings at 6 cents, light flannelettes at 8.25 cents, and bleached canton flannel cuttings at 9.75 cents. Washables have eased a trifle in price to where purchases by paper mills are reported workable at 5.25 cents, and perhaps down to 5 cents at dealers' shipping points.

Roofing paper mills also have let down to some extent in their buying of rags, since they evidently are fairly well stocked and since demand for their products has subsided after the summer period. However, prices of roofing rags are steady, and dealers assert that practically all the supply coming forward from collection quarters is finding an outlet among consumers, with accumulations in dealers' establishments unusually light. Domestic No. 1 roofing stock is selling at around 1.85 cents a pound f.o.b. shipping points, and No. 2 domestic at 1.45 to 1.50 cents, while foreign dark colored cottons are bringing 1.55 to 1.60 cents ex dock New York in sales to roofing mills. Old No. 1 white rags are quoted at around 6 cents a pound at dealers' points for repacked, while No. 2 repacked whites are reported fetching 2.75 to 3 cents per pound, and repacked thirds and blues 2.50 to 2.75 cents, with well above these prices demanded for choice packing for particular mill purposes.

In foreign rags, the high grades are selling freely and at firm prices, and at least routine activity is reported in other descriptions. Linens in particular are said to be provided with a ready outlet among paper mills.

Average quotations f.o.b. shipping points and ex dock New York are as follows:

New Stock	New York and Chicago
White shirt cuttings, No. 1	10.50–11.00
White shirt cuttings, No. 2	7.00– 7.50
Fancy shirt cuttings	6.50– 6.75
Washables, No. 1	5.00– 5.25
Unbleached muslins	10.75–11.00
White lawns	9.50–10.00
Overall cuttings, blue	7.75– 8.00
Black silesias	4.75– 5.00
Light flannelettes	8.25– 8.50
Canton flannels, bleached	9.75–10.00
Canton flannels, unbleached	8.50– 8.75
Shoe cuttings, bleached	7.50– 7.75
Shoe cuttings, unbleached	6.50– 6.75
Light silesias	8.00– 8.25
O. D. khaki cuttings	6.00– 6.25
Mixed khaki cuttings	5.00– 5.25
Corduroy cuttings	3.25– 3.50
Cottonade cuttings	3.00– 3.25
Linens, No. 1 white, foreign	15.00–16.00
Light prints, foreign	4.00– 4.50
Old Stock—	
Whites, No. 1, repacked	5.50– 6.50
Whites, No. 2, repacked	2.75– 3.00
Whites, house soiled	2.00– 2.25
Whites, street soiled	1.85– 2.00
Lace curtains	5.00– 5.25
Thirds and blues, rough	1.80– 2.00
Thirds and blues, repacked	2.50– 2.75
Black stockings	4.10– 4.25
Cotton canvas, No. 1	4.25– 4.50
White cotton batting	3.50– 3.75
Roofing, No. 1 (cloth strippings)	1.80– 1.90
Roofing, No. 2	1.45– 1.50
Linsey garments, foreign	1.80– 1.85
Dark colored cottons, foreign	1.55– 1.60
Blue linens, foreign	4.00– 4.50
Gray linens, foreign	4.50– 5.00
White linens, foreign	8.00– 9.00
Light prints, extra, foreign	2.50– 2.75

Rope and Bagging

Demand for scrap bagging from paper mills is reported increasing, with a consequent stiffening of market rates, whereas old rope is being absorbed by consumers in a manner that is having scant influence on values. Indications are that consumption of No. 1 scrap bagging is mounting. Paper manufacturers are buying in a steady way and in larger tonnage, and No. 1 scrap is readily bringing 1.60 and 1.65 cents a pound f.o.b. dealers' shipping points, with the likelihood that above these figures has been paid for extra quality bagging. Roofing bagging is in fair call and is selling at 1.25 to 1.30 cents a pound at shipping points. Gunny is in limited demand and is tending lower in price.

Domestic old manila rope is reported holding its own quotably at about 4.75 cents a pound f.o.b. shipping points, though paper mills probably are securing some supply at a bit under this price level, while No. 1 foreign old manila rope is reported available at 4 to 4.25 cents ex dock New York or other American Atlantic ports. Dealers assert that the available supply of old rope, especially of high quality, is so restricted that it would not require much additional de-

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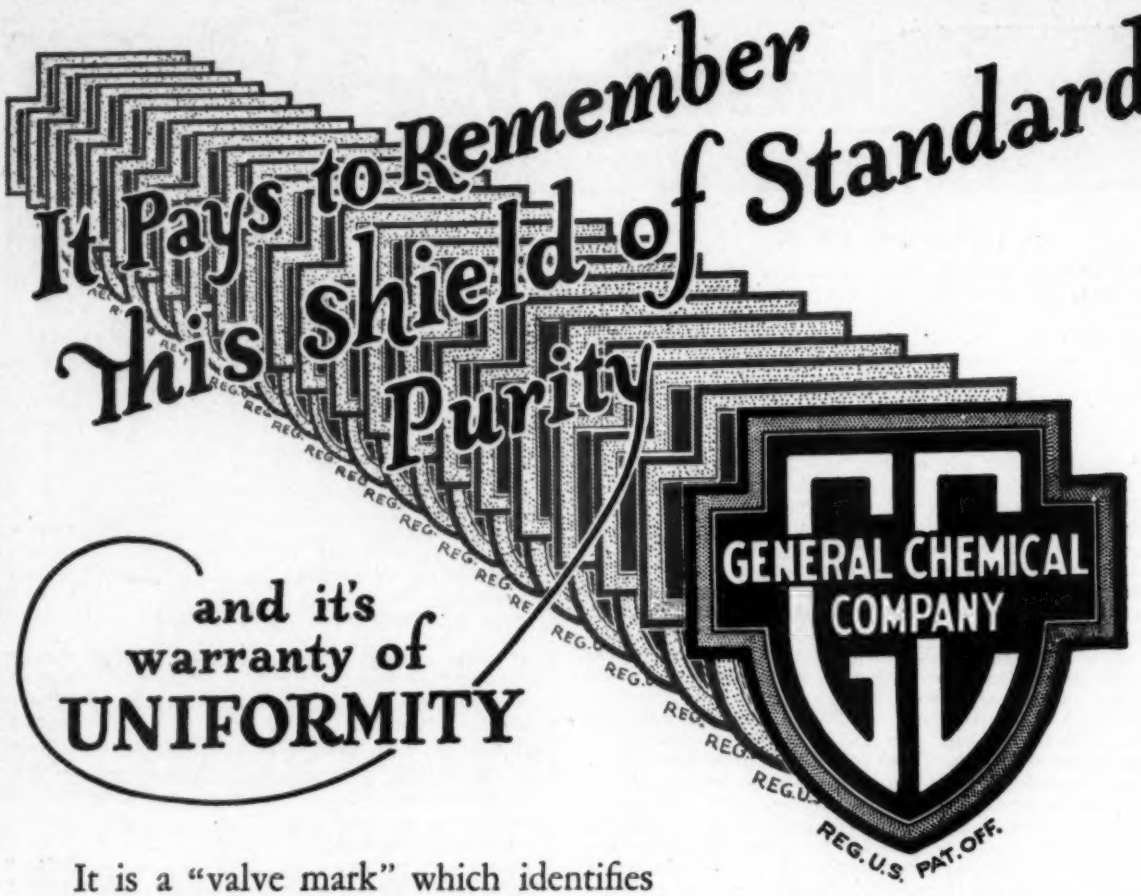

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THE NICHOLS CHEMICAL CO., LTD., MONTREAL

365

mand from papermakers to promote a sharp advance in market values. Mixed strings are selling to mills on a price range of 90 cents to $1.10 per hundred pounds, depending on the packing.

F.o.b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.55–1.60
Gunny, No. 1 foreign	1.45–1.50
Scrap bagging, No. 1	1.60–1.65
Roofing bagging	1.25–1.30
Wool tares, heavy	1.65–1.75
Wool tares, light	1.55–1.65
Manila rope, No. 1 foreign	4.00–4.25
Manila rope, No. 1 domestic	4.50–4.75
Sisal strings	1.75–2.00
Mixed strings	.90–1.10

Old Paper

Ordinarily by this time in the fall demand for waste paper has quickened to a degree where an active market exists, but the usual autumn buying has not developed in the volume anticipated by dealers, and the market can hardly be described as exhibiting other than little better than routine life. Some grades are selling well, in comparison, but demand is of a character where market values are unaffected, and prices are in a rather stationary position, and, if anything, in favor of those on the buying side.

Soft white shavings are reported in moderately good call, and are quoted on a range of 2.40 to 3 cents a pound f.o.b. shipping points, according to the quality of stock concerned, the high price being granted for strictly one-cut shavings. On the other hand, demand for hard white shavings continues slow, and dealers ask from 2.60 to 3 cents a pound for No. 1 packing at points of shipment. Ledger stock is more or less in the doldrums, and purchases of ordinary packing are reported by mills at 1.20 and 1.25 cents a pound at shipping points, with better packings quoted up to 1.40 cents. Old No. 1 kraft paper is selling around 1.90 cents a pound at dealers' points, new kraft cuttings at 2.50 cents, and white blank news at 1.65 cents. Folded news is reported available in eastern centers at 55 cents per hundred pounds at shipping points, and No. 1 mixed paper at 45 cents, with above these prices prevailing in the Middle West. Heavy No. 1 book stock has firmed slightly to a level of 1.35 to 1.45 cents a pound f.o.b. shipping points, while crumpled books are unchanged at 1.00 to 1.10 cents a pound.

The following quotations named by dealers f.o.b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	2.60–3.00
Hard white shavings, No. 2	2.40–2.60
Soft white shavings	2.40–3.00
Colored shavings	1.00–1.25
Heavy book, No. 1	1.35–1.45
Crumpled book, No. 1	1.00–1.10
Ledger stock	1.15–1.40
Kraft, No. 1	1.80–2.00
New kraft cuttings	2.40–2.60
White blank news	1.60–1.70
Manilas, No. 1	.70– .90
Manilas, container	.55– .60
Folded news	.55– .70
Sulphite mill wrappings	.75– .85
Old corrugated boxes	.65– .70
New corrugated box cuttings	.75– .85
Mixed paper, No. 1	.45– .60
Common paper	.40– .45

Pulpwood

Reports tell of a steady price tone in pulpwood although not a great deal of activity is to be observed in the market at present. Offerings are being absorbed as they are made from supply centers, but most consumers appear to be fairly well supplied and are not seeking to buy except in exceptional cases.

Imports of pulpwood into the United States during the first seven months of 1929 totaled 775,108 cords, of a declared

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LOCKPORT, N. Y.
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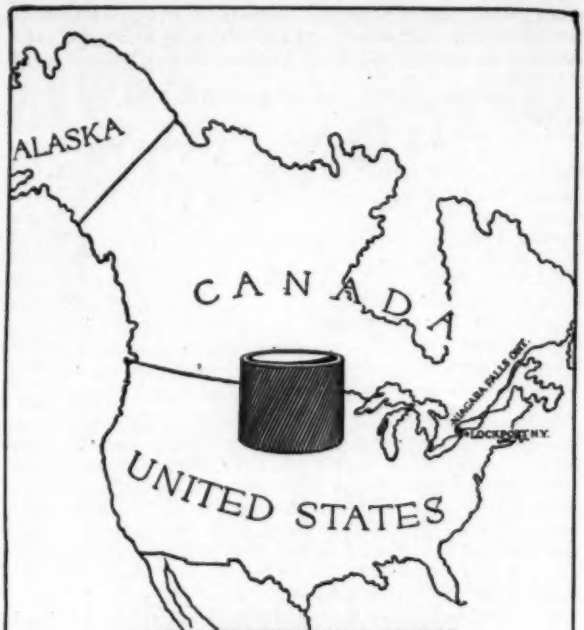

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A SIMPLE change in the manufacturing process often results in a pronounced decrease in cost of production.

Paper Mills use Starch for sizing to produce better and stronger sheets with lower cost of manufacture.

Our SPECIAL PAPER brand for beater-sizing increases strength of sheet and gives improved finish.

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A FIRST REQUISITE
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Large Production
Ample Reserves
Prompt Deliveries
Purity 99½%

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value of $8,119,756, compared with 940,848 cords of a value of $9,442,299 imported in the similar period last year, according to U. S. Department of Commerce statistics.

Mechanical Pulp

Fairly heavy rains in most pulp-grinding districts have relieved the tight supply situation that existed, as manufacturers have been enabled to increase their production, yet there is every sign that the undertone of the mechanical pulp market remains just as firm as it was, and so far as has been ascertained, no concessions in prices are being allowed by grinders. In fact, offerings of groundwood are restricted decidedly, both as regards number and tonnage. Most producers evidently are striving to keep their regular customers supplied, and at the same time take care of their own needs, and very little groundwood apparently is to be had in the open market.

Domestic groundwood is nominal in price because so scant supply is available to transient buyers. About $27 or $28 a ton f.o.b. pulp mills is regarded as the approximate market level for dry pulp. Canadian groundwood is selling at $25 to $26 per ton f.o.b. pulp plants in the Dominion for rail shipment to United States consuming centers, while groundwood brought down from Canada in vessels to U. S. Atlantic ports is reported fetching $31 and $32 a ton ex dock Atlantic seaboard. Imported groundwood of Scandinavian origin is quoted at $36 per short ton for dry and $33 for wet pulp ex dock New York.

Production of mechanical pulp in the United States in July reached 80,134 tons, compared with 92,895 tons in the preceding month, while stocks on hand at producing mills at the end of July amounted to 111,140 tons, against 120,386 tons a month earlier, according to the American Paper and Pulp Association.

Chemical Pulp

A steady and fairly active market continues to be provided for chemical wood pulps. Consumers are absorbing supplies in a consistent manner and appear to be taking the great bulk of pulp offered, with the result that prices are well maintained. Moreover, firmness in prices of most imported pulps is a factor lending strength to domestic pulp values, more especially as concerns unbleached sulphite.

The popular grades of bleached sulphite are quoted at 3.75 to 4.25 cents a pound f.o.b. pulp mills, with extra qualities ranging in price up to 4.50 and 4.75 cents. No. 1 strong unbleached sulphite of news grade is selling at 2.50 to 2.75 cents per pound, and book grades at 2.75 to 3 cents at producing plants, while bleached soda pulp is quoted at around 3.50 cents a pound delivered paper mills, and No. 1 domestic kraft pulp at 2.75 to 3 cents.

Mills in the United States produced a total of 125,450 tons of chemical pulp during July, contrasted with 127,796 tons in June, according to figures compiled by the American Paper and Pulp Association. Stocks at producing mills at the end of July were 20,844 tons, against 20,263 tons a month previously.

Quotations f.o.b. pulp mills are as follows:

Bleached sulphite	3.75–4.75
Easy bleaching sulphite	2.75–3.00
Unbleached sulphite, No. 1 strong (news grade)	2.50–2.75
Unbleached sulphite, No. 1 book	2.75–3.00
Soda pulp, bleached (delivered)	3.35–3.60
Mitscherlich, unbleached	3.00–3.25
Kraft, No. 1	2.75–3.00
Screenings, refined	1.60–1.85

Chemicals

Most paper and pulp chemicals are moving in consistent fashion and display price steadiness. Casein quotations are a shade higher on a range of 15.25 to 16.50 cents per pound, duty paid on the imported product. Rosin prices have been advanced to 9 cents a pound for the Grade E used by paper manufacturers. Bleaching powder is firm quotably at 2 to 2.35 cents a pound at works for the article in large drums.

Average quotations are as follows:

Alum, lump ammonia	3.50 – 3.75
Alum, lump starch	3.75 – 4.00

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KVP PAPERS

we thought they were pretty good, but we were not satisfied to let them go at that and so we asked our customers to point out to us the "freckles" if they discovered any, with the result that we improved and kept on improving until now we can frankly say to you that there is nothing better, in their line, than KVP Papers.

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Towel Interfolding Machines

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New Papers

Writing—	
White rag	15–40
White sulphite	9–30
Colored rag	15–40
Colored sulphite	8–30
Ledger—	
White rag	16–40
White sulphite	10–30
Colored sulphite	10–30
Colored rag	15–40
Bond—	
White rag	16–40
White sulphite	8–30
Colored sulphite	8–30
Colored rag	15–40
Book—	
No. 1 S. & S. C.	5.75– 8.00
Machine finished	5.50– 8.00
English finish	5.50– 8.00
Coated and enameled	7.50–12.00
Lithograph, M. F.	7.50–12.00
Newsprint—	
Rolls, contract, per ton, delivered New York	62.00–
Rolls, transient, per ton, delivered New York	62.00–
Sheets, per ton, delivered New York	67.00–
Side runs, per ton, delivered New York	47.00–52.00
Cover stock—	
Coated, both sides	–10.25
Coated, one side	–10.15
Tissue—	
No. 1 white, 20x30	.75– .90
No. 2 white, 24x36	.75– .90
No. 1 Manila, 24x36	.75– .80
Kraft	.95–1.10
Wrapping—	
No. 1 kraft	6.00–6.50
No. 2 kraft	5.00–5.50
Southern kraft	4.50–5.50
Boards—	**New York and Chicago**
Solid news	40.00–45.00
Straw	50.00–55.00
Plain chip	35.00–37.50
White coated chip	50.00–55.00
Manila coated chip	45.00–50.00
Binder's board	65.00–70.00

Chemicals

(*Continued from page* 1285)

Blanc fixe, powder	3.50 – 3.75
Bleaching powder	2.00 – 2.35
Brimstone (long ton, at mine)	18.00 –20.00
Casein (duty paid)	15.25 –16.50
Caustic soda, spot delivery	2.90 – 3.00
China clay, domestic washed	8.00 –13.00
China clay, foreign	15.00 –21.00
Rosin, Grade E	9.00 – 9.05
Satin white	2.00 – 2.25
Soda ash, 50 per cent light (bags)	1.32½– ....
Starch, papermakers', in bags	3.82 – ....
Talc (ton)	16.00 –18.00

Commercial Disputes Best Settled by Arbitration

Many commercial disputes arising in the paper and pulp industry can be settled in short time at low cost by arbitration instead of by costly and long-drawn-out litigation, declared Joseph Mayper, trades relations counsel of the American Arbitration Association, speaking at a luncheon of the Salesmen's Association of the Paper Industry at the Canadian Club, New York, on Monday, September 16. Endicott Rantoul, manager of the mulch paper division of the International Paper Company, presided.

To promote the establishment of effective arbitration facilities in the industry, the American Arbitration Association is working with a number of responsible organizations representing its producing, manufacturing and buying branches, so that all commercial disputes of the industry may be settled economically and effectively, Mr. Mayper said. Under the federal arbitration law and the laws of ten states, any provision in a written contract to settle by arbitration a dispute which may later arise out of the contract is binding on both parties, Mr. Mayper pointed out. A party declining to submit to arbitration any dispute arising out of such a contract can be compelled by law to submit his defense and proceed with the arbitration.

The arbitrator or arbitrators are selected mutually by the disputants. The American Arbitration Association, Mr. Mayper said, is carrying on an educational campaign to discourage the policy of selection of one arbitrator by each side, because such arbitrators tend to be advocates.

When the award is rendered and is properly recorded in writing, it is final so far as the merits of the controversy are concerned. The party against whom the award has been made, Mr. Mayper stated, usually abides by it. If he does not, the successful party may move in court for a confirmation of the award, and the court may confirm and enter judgment thereon, unless proof is submitted that the arbitrators were biased or partial or that they exceeded their authority.

Facilities of the American Arbitration Association, including its national panel of 7,000 arbitrators, were placed at the disposal of the paper trade salesmen and the firms they represent by Mr. Mayper.

In a lively question-answer session which followed the talk, it was developed that the cost of arbitration is most nominal under the rules of the American Arbitration Association. Ten dollars to each party is the cost of the hearing on any arbitration involving $1,000 or less; $25 each for disputes involving up to $10,000 and $100 each for cases involving $10,000 or more. Half the cost of the first hearing is charged for any necessary subsequent hearings. A technical expert represents the association at all hearings.

Paper Shipping Tags Standardized

It was recently announced by the Division of Simplified Practice of the Bureau of Standards, Department of Commerce, that Simplified Practice Recommendations No. 93—Paper Shipping Tags, should be considered effective from September 1, 1929.

The receipt, by the Division, of signed acceptances from a sufficient number of manufacturers, distributors and users of Paper Shipping Tags to insure the general adoption of this simplification program has made possible this announcement.

L. E. Longstreth of the Container Corporation of America, Chicago, has been accepted by the Joint Committee on Approved Pulp Testing Chemists.

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BLEACHED AND UNBLEACHED

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CANADIAN KRAFT LIMITED, Three Rivers, Canada
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"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
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"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
Extra Strong Kraft

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Kraft Pulp 50 tons daily

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We ship in Sheets, baled

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Seamless felts for fast running.
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EXPORTS

Exports of paper from the United States scored a fairly sharp increase in point of total value in July as compared with the preceding month, and a larger gain over the exportations in the corresponding month last year. According to official statistics compiled and issued by the U. S. Department of Commerce in Washington, exports of paper of all kinds in July reached a value of $3,147,717, contrasted with $2,928,948 in June of this year, and $2,519,963 in July last year. Exports during the first seven months of the current year totaled $22,039,956, against $17,795,058 in the similar period of 1928, recording an appreciable increase.

Exports of newsprint in July amounted to 2,738,222 pounds, valued at $117,536, compared with 2,739,306 pounds of a value of $110,509 exported in the preceding month, and 2,391,764 pounds of a value of $90,944 in the same month last year. Newsprint exports in the first seven months of this year climbed to 19,769,020 pounds, of a declared value of $748,279, against 12,866,291 pounds of a value of $491,413 in the similar time a year ago. The largest exports this year were to the Philippine Islands, 5,859,061 pounds; South America, 5,140,861 pounds, and to China, 3,666,180 pounds.

Wrapping paper exports in July were 3,368,911 pounds, valued at $240,467, as compared with 3,099,773 pounds of a value of $225,398 in the same month last year, while book paper exports in July reached 3,279,804 pounds, valued at $245,039, contrasted with 2,136,675 pounds of a value of $151,829 in July, 1928. Writing paper exportations climbed from 1,828,259 pounds of a value of $201,642 in July last year, to 2,190,099 pounds of a value of $231,658 in the same month this year.

Exports of boxboard in July were valued at $145,215, compared with $128,516 in July a year ago, and of other paperboard and strawboard at $178,735, against $175,116 last year. Exports of paper boxes and cartons increased from a total value of $148,860 in July, 1928, to $183,434 in July this year.

IMPORTS

Wood Pulp

The statistical position of imported wood pulp is firm decidedly, and prices are displaying pronounced steadiness, especially on some classes of pulp, notably unbleached sulphite and easy bleaching sulphite. Mills abroad with rare exception are sold out for this year and also have most of their production for the first half of 1930 under contract, and the greater part of the current activity in the market involves supplies for forward shipment from primary sources late next year. Indications are, and reports substantiate, that European consumers have bought ahead in relatively larger volume than have papermakers in the United States, and yet consumers here have in numerous instances contracted freely for shipments during the first few months of 1930, and some are said to have bought as far into the future as for spring shipment from abroad in 1931.

Importers and agents are stressing the strong condition as regards available supplies at primary sources, and consumers apparently consider the situation so firm and the probabilities of lower prices so remote that they are not hesitating to cover any known requirements for sometime into the future. Consequently, there is fair activity in the market, with sales of more or less tonnage being negotiated day by day for forward shipment from abroad, and with such lots of most grades of pulp as are finding their way into the spot market readily absorbed also. Imports are holding up to a very high level, which seems to prove conclusively that purchases by paper and board mills have been on a large scale. Prices in one or two cases have recorded a little further strengthening, and seem destined to seek higher levels.

Strong unbleached sulphite is reported scarcely available at less than 2.85 cents a pound ex dock New York or other American Atlantic ports, and sales of this kind of pulp of extra quality have been noted at 2.95 cents and up to 3 cents. Prime easy bleaching sulphite is firm on a price range of 2.90 to 3.15 cents a pound ex dock Atlantic seaboard, while ordinary Mitscherlich sulphite is quoted at around 2.85 cents on the dock at New York. Bleached sulphite is not as firm of tone as is unbleached, but quoted rates are maintained at 3.65 to 4 cents a pound ex dock New York, with extra grades held at 4.25 cents and more. Prime Swedish kraft is quoted at 2.45 to 2.50 cents per pound ex dock American Atlantic ports for forward shipment from abroad. Some sellers are granting slight concessions in price on kraft, it is said, especially in cases where new tonnage is coming onto the market from newly-erected mills in Scandinavia. Imported groundwood is firm on a high price basis as compared with quotations on domestic and Canadian groundwood, importers asking $36 per short ton ex dock New York for dry and about $33 for moist groundwood of European origin.

During July, imports of chemical wood pulp into the United States amounted to 143,915 long tons, valued at $8,182,448, according to official figures issued by the U. S. Department of Commerce. This probably established a new high record of pulp importations into this country in any single month, and brought the total for the first seven months of this year up to 817,797 long tons of chemical pulp, of a declared value of $47,241,602, representing a large increase over the 712,194 tons of a value of $41,392,984 imported in the corresponding period last year. Imports of groundwood in July were 16,718 long tons, valued at $428,234, making a total for the first seven months of 1929 of 128,246 tons, valued at $3,254,831, against 124,402 tons of a value of $3,039,341 in the similar time a year ago.

Current market quotations ex dock New York, and receipts at the port of New York during September, 1929, follow:

Bleached sulphite, No. 1	3.65– 4.25
Unbleached sulphite, strong No. 1	2.85– 3.00
Unbleached sulphite, No. 2	2.65– 2.85
Easy bleaching sulphite	2.90– 3.15
Mitscherlich unbleached, genuine	3.00– 3.25
Mitscherlich unbleached, ordinary	2.75– 3.00
Kraft, standard Swedish	2.45– 2.50
Groundwood, per ton (dry)	35.00–36.00

Bulkley, Dunton & Co., 2 100 bls. from Gothenburg, 4,650 Hernosand, 10,000 Stugsund, 750 Iggesund and 1,625 Gefle; M. Gottesman & Co., 1,000 bls. from Rotterdam and 850 Iggesund; E. M. Sergeant Co., 799 bls. from Gothenburg and 300 Oslo; Price & Pierce, Ltd., 3,400 bls. from Wallvik, 3,250 Gothenburg and 950 Stugsund; Scandinavian Pulp Agency, 1,950 bls. from Skutskar; Stora Kopparberg Corp., 2,235 bls. from Skutskar; Johaneson, Wales & Sparre, 2,060 bls. from Gothenburg and 8,130 Hernosand; O. E. Klaer, 1,200 bls. from Stockholm and 600 Gothenburg; Irving Trust Co., 1,200 bls. from Hernosand and 125 Oslo; J. Andersen & Co., 10,096 bls. from Hernosand, 1,000 Stugsund, 2,250 Sarpsborg and 2,160 Greaker; Chemical Bank & Trust Co., 380 bls. from Hamburg and 780 Oslo; Castle & Overton, 1,402 bls. from Hamburg; Atterbury Bros., 1,000 bls. from Oslo; E. J. Keller Co., 357 bls. from Hamburg; Pagel, Horton & Co., 6,000 bls. from Gefle; Borregaard Co., 750 bls. from Sarpsborg; National City Bank, 800 bls. from Oslo; Order, 532 bls. from Hamburg, 7,770 Hernosand, 1,405 Viborg, 511 Kotka and 750 Greaker.

Paper Stock

Importations of papermaking rags into the United States in July amounted to 41,387,217 pounds, valued at $862,276,

Giving the Beaters a Lift

Conveyor or Gravity Feed Shredder

In the new mill of Taggart Bros. Co., Inc., Oswego, New York, one MITTS & MERRILL SHREDDER having a capacity of eight tons of dry stock per hour, shreds kraft pulp and discharges the stock by gravity into the chest where it is agitated until needed for the beaters.

The MITTS & MERRILL SHREDDER through it's economical method of preparing stock for the beater contributes much to the completion of the beater's work in the shortest possible time, thereby cutting down operating costs and speeding up the process of paper making.

MITTS & MERRILL SHREDDERS are built in sizes with spouts ranging from 18" to 45" wide. We will be glad to quote you on any size adapted to your requirements.

It gives the beater an economical lift.

MITTS & MERRILL

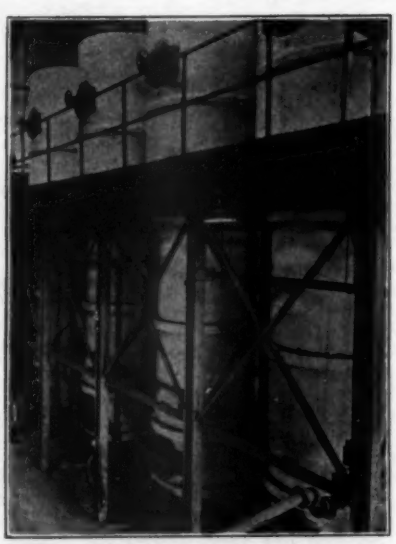
1013 Tilden Street, Saginaw, Mich.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse

See pages 372 and 373 in the 1929 Paper and Pulp Mill Catalogue

IMPROVED BADGER BLACK LIQUOR EVAPORATORS

Recent Installation
CHAMPION FIBRE CO.
Canton, N. C.



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MAXIMUM STEAM ECONOMY

NO ENTRAINMENT

SODA and SULPHATE PROCESSES

E. B. BADGER & SONS CO., Boston, U. S. A.

bringing the total for the first seven months of this year up to 253,117, 061 pounds of a value of $5,130,634, compared with 249,552,745 pounds of a value of $4,601,961 imported in the similar period of 1928, according to official statistics issued by the U. S. Department of Commerce. Imports of waste bagging and waste paper in the same seven-month time were 86,994,205 pounds, against 87,851,815 pounds last year, while imports of old rope and miscellaneous paper stock were 67,840,034 pounds, contrasted with 35,715,600 pounds a year ago.

Arrivals of papermaking materials during September were fairly heavy, judging from receipts through the port of New York. Some sizable shipments of rags in particular were received. Imports of all kinds of paper stock excepting wood pulp at the port of New York during September, these data being taken from manifests of steamers reaching that port during the month, were as follows:

Old Rope—Castle & Overton, 79 coils; International Purchasing Co., 222 bls. and 400 coils; Brown Bros. & Co., 1,082 coils and 196 bls.; William Steck & Co., 111 bls. and 96 coils; United Fruit Co., 150 bls.; Trust Company of North America, 34 bls.; Daniel I. Murphy, Inc., 113 bls.; W. Schall & Co., 182 coils; Banca Commerciale Italiana Trust Co., 55 bls. and 51 rolls; J. C. Van Itallie & Co., 52 coils; Irving Trust Co., 87 bls.; N. E. Berzen, 143 bls.; E. J. Keller Co., 45 bls.; Order, 119 coils and 85 bls.

Old Bagging—E. J. Keller Co., 68 bls.; Castle & Overton, 108 bls.; I. N. Brand, 115 bls.; Darmstadt, Scott & Courtney, 98 bls.; Banca Commerciale Italiana Trust Co., 717 bls.; W. Schall & Co., 624 bls.; Overton & Co., 825 bls.; E. Butterworth & Co., 54 bls.; Leshner Corp., 135 bls.; Paul Berlowitz, 45 bls.; Guaranty Trust Co., 95 bls.; Chemical Bank & Trust Co., 107 bls.; Brown Bros. & Co., 54 bls.; Order, 188 bls.

Rags—Darmstadt, Scott & Courtney, 130 bls.; Castle & Overton, 1,524 bls.; Ernst Mayer, 10 bls.; Fritz Stern, 75 bls.; J. T. Lodge, 3 bls.; Charles Belsky Co., 86 bls.; Katzenstein & Keene, 140 bls.; A. Friechman, 53 bls.; I. N. Brand, 300 bls.; J. Milton, 25 bls.; Jaffe Products Co., 12 bls.; Albany Fiber Co., 14 bls.; R. Canovai & Son, 15 bls.; J. Reiss & Co., 74 bls.; Atlas Waste Mfg. Co., 25 bls.; Oppenheimer Casing Co., 417 bls.; E. Butterworth & Co., 149 bls.; S. Birkenstein & Sons, 272 bls.; Paul Berlowitz, 238 bls.; George W. Millar & Co., 198 bls.; Victor Galaup, Inc., 194 bls.; J. Cohen & Son, 397 bls.; George M. Graves Co., 34 bls.; Daniel I. Murphy, Inc., 62 bls.; Bank of the Manhattan Co., 48 bls.; A. Schwartz, 39 bls.; N. E. Berzen, 34 bls.; E. A. Stone Co., 15 bls.; Kelly & Co., 15 bls.; E. J. Keller Co., 292 bls.; Brown Bros. & Co., 233 bls.; Advance Import Co., 11 bls.; Fidelity Trust Co., 303 bls.; Guaranty Trust Co., 254 bls.; French-American Banking Corp., 696 bls.; Equitable Trust Co., 3,277 bls.; Irving Trust Co., 510 bls.; Chemical Bank & Trust Co., 1,025 bls.; Anglo-South American Trust Co., 521 bls.; National City Bank, 459 bls.; Chase National Bank, 504 bls.; Bank of New York & Trust Co., 416 bls.; Albany Trust Co., 12 bls.; International Acceptance Bank, 23 bls.; New York Trust Co., 142 bls.; Banco Commerciale Italiana Trust Co., 116 bls.; Armstrong Cork Co., 125 bls.; Flintkote Co., 180 bls.; Baring Bros. & Co., 233 bls.; A. W. Fenton, Inc., 1,223 bls.; Gallagher & Ascher, 76 bls.; American Overocean Co., 116 bls.; Amsinck, Sonne & Co., 290 bls.; American Foreign Credit Corp., 56 bls.; T. D. Downing & Co., 119 bls.; W. Schall & Co., 220 bls.; Amtorg Trading Co., 225 bls.; C. R. Spence & Co., 482 bls.; U. S. Lines Corp., 13 bls.; Order, 2,358 bls.

Miscellaneous Paper Stock—Daniel M. Hicks, Inc., 645 bls.; Belgam Corp., 103 bls.; Whaling Waste Products Co., 90 bls.; J. Cohen & Son, 12 bls. Castle & Overton, 68 bls.; S. Birkenstein & Sons, 47 bls.; E. Butterworth & Co., 476 bls.; Victor Galaup, Inc., 56 bls.; Hicks-Costarino, Inc., 10 bls.; Alexander H. Searle, Inc., 133 bls.; George W. Millar & Co., 27 bls.; E. J. Keller Co., 245 bls.; Irving Trust Co., 220 bls.; Chemical Bank & Trust Co., 41 bls.; Equitable Trust Co., 384 bls.; Chase National Bank, 160 bls.; Banca Commerciale Italiana Trust Co., 27 bls.; Bank of the Manhattan Co., 58 bls.; Anglo-South American Trust Co., 180 bls.; Fidelity Trust Co., 60 bls.; Brown Bros. & Co., 603 bls.; W. Schall & Co., 97 bls.; Amsinck, Sonne & Co., 71 bls.; Milton Snedeker Corp., 83 bls.; T. D. Downing & Co., 264 bls.; R. F. Downing & Co., 47 bls.; Order 1,646 bls.

Paper

The United States imported paper to the value of $14,151,729 in July last, according to official figures complied by the U. S. Department of Commerce, showing an increase over the imports valued at $12,649,377 in the same month of 1928. Imports during the first seven months of this year were valued at $91,456,973, as contrasted with $88,584,358 in the corresponding period last year.

Paper imports in September were up to an average of monthly importations, taking the receipts through the port of New York as a criterion. While official statistics are not yet available, following are the arrivals at the port of New York last month, these data being taken from manifests of vessels reaching that port during September:

Printing—Perkins-Goodwin Co., 964 reels from Hamburg; Dingelstedt Co., 7 cs. from Bremen; P. C. Zuhlke, 58 cs. from Bremen and 50 cs. Antwerp; Bank of Montreal, 11,581 rolls from Corner Brook; E. Dietzgen & Co., 163 cs. from Rotterdam and 94 cs. Hamburg; Colombia Steamship Co., 301 bls. from Kotka; C. Steiner, 36 cs. from Bremen and 19 cs. Rotterdam; Keuffel & Esser Co., 107 reels from Hamburg; Stora Kopparberg Corp., 329 reels from Gothenburg; H. Reeve Angel & Co., 67 reels from Bremen and 549 reels Kotka; Journal of Commerce, 65 reels from Hamburg and 65 reels Kotka; Walker Goulard Plehn Co., 85 cs. from Hamburg; J. J. Bernitz & Co., 61 bls. from Hamburg; American News Co., 73 cs.

Another Friendly Couple—
—Silicate and Rosin

Silicate in many respects resembles rosin size. Both are alkaline liquids in which soda is combined with a material of weakly acid nature. Both may be precipitated with alum, yielding materials retained in the paper.

Though silicate alone does not impart waterproof qualities to the paper, it assists in retaining more rosin. That means a more waterproof sheet for you. On its own, silicate hardens the paper, sizes against printers' ink and makes a smoother surface.

Either our "S" Brand or "A-Syrup" Silicate is satisfactory for use with rosin. May we discuss silicate sizing for your individual needs?

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General Office: 121 S. Third St., Philadelphia
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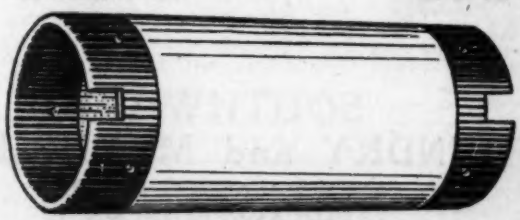

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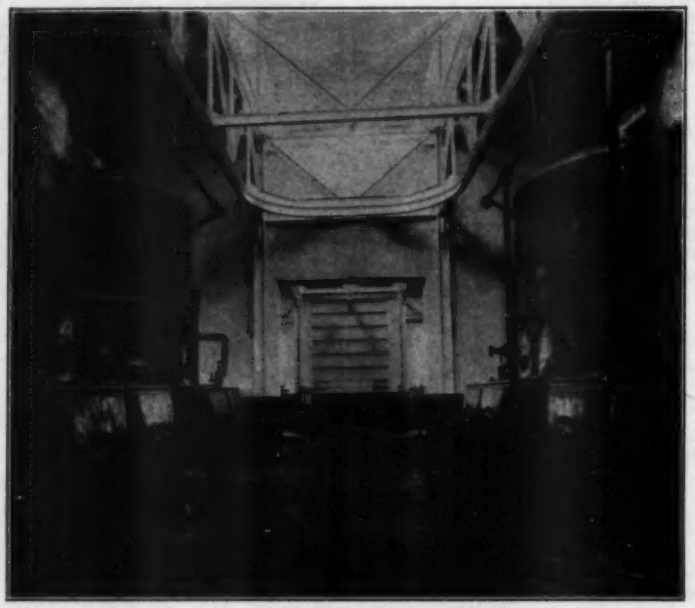
Hamilton, Ont. Canada



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Quadruple Effect

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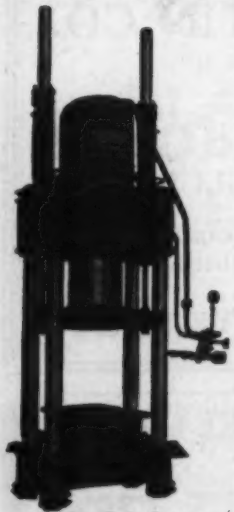

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Hydraulic Equipment for Pulp and Paper Mills, Wall Board Plants, Etc.

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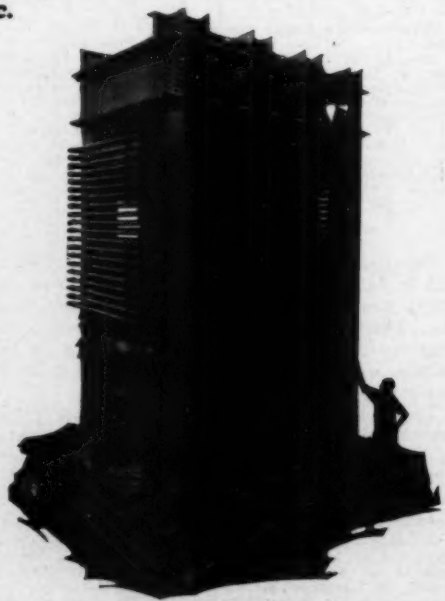
Southwark Hydraulic Equipment is the choice of the largest and best known Pulp and Paper Mills throughout the country. They find Southwark products give the most efficient service under exacting conditions. Write for Bulletin No. 14.



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from Havre; Robert Wilson Paper Co., 20 cs. from Glasgow; W. A. Foster, 166 bls. from Glasgow; Order, 2,033 reels and 4 cs. from Bremen.

Wrapping—Wilkinson Bros. & Co., 204 rolls and 59 bls. from Hamburg and 23 bls. and 15 rolls Gothenburg; E. Henningson, 16 bls. from Bremen; International Forwarding Co., 25 cs. from Antwerp; Sylvania Industrial Corp., 157 cs. from Antwerp; M. M. Cohen, 157 rolls and 6 bls. from Hamburg; A. F. Stauff, 7 bls. from Hamburg; Thomas Barrett & Son, 27 bls. from Gothenburg; Chemical Bank & Trust Co., 63 rolls from Gothenburg; H. Reeve Angel & Co., 99 rolls and 5 bls. from Gothenburg; C. Steiner, 23 cs. from Hamburg; American Express Co., 116 cs. from Hamburg, Atlantic Forwarding Co., 22 cs. from Hamburg; Birn & Wachenheim, 74 cs. from Antwerp; Borregaard Co., 149 reels from Gothenburg; Arkell Safety Bag Co., 32 reels from Gothenburg; Bernard Ullmann & Co., 26 bls. and 12 reels from Gothenburg; J. P. Heffernan Paper Co., 104 bls. from Antwerp; Walker Goulard Plehn Co., 32 cs. from Hamburg; Order, 23 bls. from Hamburg and 6 bls. Antwerp.

Cigarette—Standard Products Corp., 141 cs. from Southampton, 12 rolls Liverpool and 283 cs. Havre; American Tobacco Co., 1,650 cs. from Bordeaux; Bank of the Manhattan Co., 20 cs. from Lisbon; P. J. Schweitzer, Inc., 174 cs. from Marseilles and 33 cs. Havre; Liggett & Myers Tobacco Co., 49 cs. from Bordeaux; De-Maudult Paper Corp., 539 cs. from St. Nazaire, 5 cs. London and 550 cs. Havre; Southern Pacific Co., 3 cs. from Havre; British-American Tobacco Co., 11 cs. from Southampton; P. Lorillard Co., 100 cs. from Marseilles.

Writing—G. W. Sheldon & Co., 2 cs. from Southampton; Guibont Freres & Co., 15 cs. from Southampton and 13 cs. Havre; Eleto Co., 12 cs. from Havre; B. Altman & Co., 12 cs. from Southampton; Distinctive Writing Paper Co., 2 cs. from Havre; F. C. Gerlach, 3 cs. from Southampton.

Filter—H. Reeve Angel & Co., 54 cs. from London; J. Manheimer, 52 bls. from Southampton; E. Fougera & Co., 146 cs. from Southampton; P. H. Petry & Co., 105 bls. from Rotterdam; Blackman & Blackman, 24 bls. from Bordeaux; C. Sleicher & Scholl Co., 16 cs. from Hamburg; Atlantic Forwarding Co., 9 cs. from Bremen.

Tissue—W. J. Byrnes & Co., 10 cs. from Southampton; Schenkers, Inc., 418 cs. from Hamburg; G. W. Sheldon & Co., 3 cs. from London; Baldwin Universal Co., 5 cs. from Liverpool; Milton Snedeker Corp., 13 cs. from Hamburg; F. B. Vandegrift & Co., 15 cs. from Liverpool.

Drawing—H. Reeve Angel & Co., 23 cs. from London; G. Haas, 4 cs. from London; Keuffel & Esser Co., 7 cs. from Rotterdam and 167 cs. Hamburg; Favor, Ruhl & Co., 6 cs. from Havre.

Hanging—A. C. Dodman, Jr., Inc., 3 bls. from Bremen, 23 bls. Liverpool and 9 bls. Southampton; C. A. Haynes & Co., 33 bls. from London and 12 cs. Liverpool; R. F. Downing & Co., 30 bls. from London and 2 cs. Southampton; G. J. Hunken & Co., 5 cs. from Bremen; S. Stern Stiner & Co., 2 bls. from Hamburg; F. J. Emmerich & Co., 6 bls. from Liverpool and 36 bls. Hamburg; International Mercantile Marine Co., 5 cs. from Southampton; F. A. Binder, 2 bls. from Bremen; J. E. Bernard & Co., 32 pkgs. from Antwerp, 10 cs. Bremen and 3 cs. Havre; F. & R. Trading Co., 553 reels from Bremen; Schmidt, Pritchard & Co., 2 cs. from Bremen; Guaranty Trust Co., 29 cs. from Hamburg; Wedeman. Godknecht & Lally, 9 cs. from Bremen; Irving Trust Co., 20 cs. from Hamburg; Order, 4 cs. from Southampton.

Photo—J. J. Gavin & Co., 10 cs. from Southampton; Globe Shipping Co., 754 cs. from Bremen and 119 cs. Rotterdam; P. C. Zuhlke, 70 cs. from Bremen and 115 cs. Antwerp; Gevaert Co. of America, 100 cs. from Antwerp; J. H. Schroeder Banking Corp., 45 cs. from Bremen; Intersped Agency, 8 cs. from Gothenburg; Medo Photo Supply Co., 18 cs. from London; Order, 26 cs. from Hamburg.

Board—Perkins-Goodwin Co., 706 rolls from Rotterdam; Adrian Vuyck 200 reels from Rotterdam; Guaranty Trust Co., 95 reels from Rotterdam; Wilkinson Bros. & Co., 59 rolls from Gothenburg; Chatham & Phenix National Bank, 66 bls. from Gothenburg; D'Orsay Perfumery Co., 35 cs. from Havre; H. H. Ayer, 5 cs. from Havre; Lagerloef Trading Co., 427 reels from Kotka and 166 bls. Helsingfors; C. H. Powell & Co., 190 reels from Rotterdam; Fibre Products Mfg. Co., 22 bls. from Gothenburg; Irving Trust Co., 24 cs. from Barcelona; Cheramy, Inc., 21 cs. from Havre; Walker Goulard Plehn Co., 267 rolls from Rotterdam; Order, 115 bls. from Hamburg.

Miscellaneous—Japan Paper Co., 11 cs. from Havre, 1 cs. Genoa, 4 cs. Gothenburg and 12 cs. Rotterdam; J. Beckhardt & Co., 40 cs. from Havre and 20 cs. Bremen; Keller-Dorian Paper Co., 36 cs. from Havre and 24 cs. Southampton; Causon & Montgolfer, 11 cs. from Havre; M. J. Corbett & Co., 2 cs from Southampton; S. Gilbert, 69 cs. from Bremen; Hensel, Bruckman & Lorbacher, 62 cs. from Bremen and 2 cs. Havre; C. D. Stone, 2 cs. from Bremen; Birn & Wachenheim, 4 cs. from Antwerp; B. F. Drakenfeld & Co., 74 cs. from Liverpool; J. J. Shore & Co., 5 cs. from Bremen; Dollar Steamship Co., 5 cs. from Marseilles; Central Hanover Bank & Trust Co., 273 cs. from Hamburg; Bendix Paper Co., 7 bls. from Hamburg; Parsons & Whittemore, 64 cs. from Liverpool; U. S. Envelope Co., 91 bls. from Gothenburg; Whiting-Patterson Co., 28 cs. from Southampton; Maritime Inspecting & Forwarding Co., 32 cs. from Havre; American Express Co., 56 cs. from Bremen, 3 cs. Hamburg and 75 cs. Havre; R. F. Downing & Co., 3 cs. from Havre and 2 cs. Southampton; Titan Shipping Co., 6 cs. from Havre; Hudson Forwarding Co., 3 cs. from Bremen; Globe Shipping Co. 34 cs. from Bremen, 122 cs. Rotterdam, 4 cs. Havre and 378 cs. Hamburg; Gallagher & Ascher, 5 cs. from Bremen; Universal Carloading & Distributing Co., 4 cs. from Bremen and 2 cs. Hamburg; Brown Bros. & Co., 15 cs. from Hamburg; Independent Forwarding Co., 4 cs. from Havre and 20 bls. Southampton; International Forwarding Co., 28 cs. from Rotterdam and 6 cs. Hamburg; Rohner, Gehrig & Co., 5 cs. from Hamburg; Coenca-Morrison Co., 11 cs. from Havre; Coty, Inc., 6 cs. from Havre; F. L. Kraemer & Co., 32 cs. from Bremen and 204 bls. Gothenburg; Heemsoth & Basse, 2 cs. from Bremen and 53 bls. Rotterdam; Steiner Paper Corp., 91 cs. from Rotterdam; Johaneson, Wales & Sparre, 4 cs. from Rotterdam; G. W. Sheldon & Co., 3 cs. from Southampton; Dupont Cellophane Co., 4 cs. from Halifax; F. Murray Hill, Inc., 5 cs. from Bordeaux and 5 cs. Hamburg; Thomas & Pierson, 4 cs. from Southampton; P. H. Petry & Co., 2 bls. from Havre and 2 cs. Hamburg; Southern Pacific Co., 600 bls. from Genoa; Meadows, Wye & Co., 46 cs. from Rotterdam and 3 cs. Liverpool; Beekman Card and Paper Co., 6 cs. from Rotterdam; Miller & Wright

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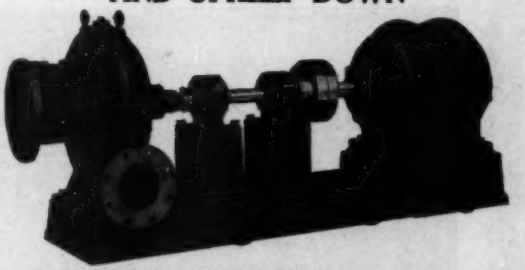
NATIONAL DYES

PUMPS

THAT KEEP PRODUCTION UP AND UPKEEP DOWN



LAWRENCE "VORTEX" is the answer

LAWRENCE "VORTEX" PUMPS are giving day-in ——day-out performance in numerous pulp and paper mills, handling all types of liquids and thick stock. The outstanding features are:—DURABILITY — ACCESSIBILITY — RELIABILITY.

These are the vital factors that eliminate pump troubles.

There is a LAWRENCE "VORTEX" pump for every service in the paper industry. It will pay you to investigate and standardize on the "VORTEX".

Write for recommendations and bulletins.

Lawrence Pump & Engine Co.

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THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

Made by

DRAPER BROTHERS COMPANY

CANTON, MASS.

Woolen Manufacturers Since 1856

REPRESENTATIVES

L. H. BREYFOGLE, Kalamazoo, Mich. INTERNATIONAL TRADING CO., Philadelphia, Pa.

PACIFIC SALES COMPANY, Security Bldg., Portland, Ore.

BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. BOSTON, MASS.

Paper Co., 2 cs. from Rotterdam; E. M. Sergeant Co., 10 cs. from Gothenburg; F. C. Strype, 16 cs. from Genoa; W. H. Quick, 13 bls. from Hamburg; Borden & Riley Paper Co., 9 cs. from Antwerp; Whitfield Paper Works, 25 cs. from Kobe; K. D. Paper Co., 39 cs. from Havre; Pennsylvania Railroad Co., 10 cs. from Havre; Seisi Co., 17 cs. from Havre; U. S. Lines Corp., 347 cs. from Bremen; W. Bersch, 8 cs. from Bremen and 3 cs. Rotterdam.

Foreign Trade Opportunities

The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cities, in every case mentioning the number of the inquiries referred to.

No. 40447—Gummed paper for sealing packages. San Juan, Porto Rico. Purchase and agency desired.

No. 40509—Felts for paper mills. Oslo, Norway. Agency desired.

No. 40629—Cardboard, packing paper, and printing paper, of good quality. Calais, France. Purchase desired.

No. 40627—Insoles, shoe, of leatherboard, fiber, etc. Vienna, Austria. Purchase and agency desired.

No. 40685—Paper cedar bags for storing clothing. Wellington, New Zealand. Agency desired.

No. 40678—Newsprint paper in rolls. Madrid, Spain. Agency desired.

No. 40781—Toilet paper. Buenos Aires, Argentina. Agency desired.

No. 40802—Cellulose sheets, transparent, for packing candy, etc. Copenhagen, Denmark. Agency desired.

No. 40832—Strawboard, lined, white. Sydney, Australia. Purchase desired.

No. 40790—Wall board. Copenhagen, Denmark. Purchase desired.

New Catalogues, Books and Publications

Bailey Meter Co., Cleveland, Ohio—A new bulletin, No. 181 is just out. The Contents include features of Bailey control, also an explanation of how flexibility in both operation and application is secured to make possible the absolutely safe automatic operation of dampers and fan motors in the proper sequence. The booklet is well illustrated and will be sent on request.

Bristol Company, Waterbury, Conn.—A new catalogue, No. 2100, covers Bristol's Recording Psychrometers, which are sometimes known as wet and dry bulb thermometers. These instruments are to determine the relative humidity or atmospheric moisture. The construction and operation of the psychrometer is clearly explained and the different types are illustrated and described.

W. E. Caldwell Co., Louisville, Ky.—The fortieth edition of this company's catalogue lists its line of wood and steel tanks and towers. Price tables on the various styles of tanks are given.

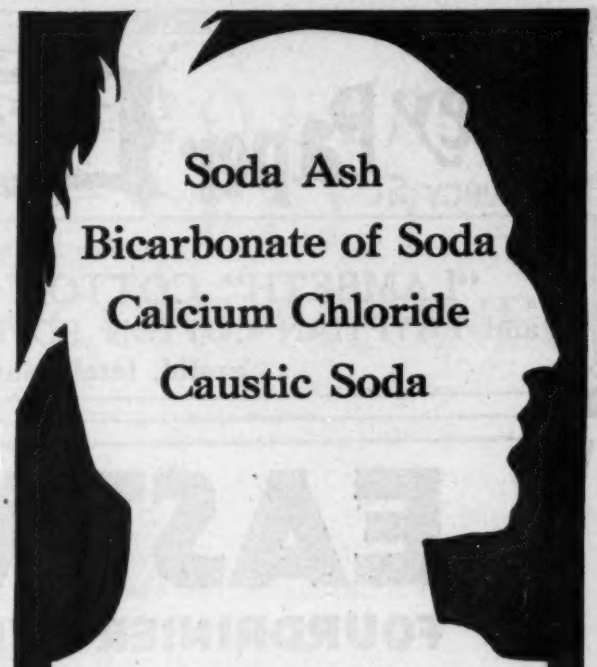
Combustion Engineering Corp., New York City—A new and revised edition of general catalogue GC-5 illustrates and briefly describes the more important fuel-burning and steam-generating equipment manufactured by this company. Another catalogue covers the Quinn Oil Burning Equipment. This burner is made in five sizes. Each size is illustrated and a list of parts is included. The Quinn Pressure Gravity Syphon Burner, the Quinn Oil Torch are also shown and described. Reprints of an article by V. H. Braunig, Supt. Electric Dept., San Antonio Public Service Co., on the subject of "Operating Experience Proves Pulverized Lignite a Satisfactory Fuel" have been issued in booklet form. Copies of all upon request.

Connersville Blower Co., Connersville, Ind.—A new bulletin No. 201 describes Connersville Rotary Gas Exhausters. A description of the general operating principal of the exhausters is given, also a basis upon which to determine the different bearing constructions used in its manufacture and other construction features.

Erie City Iron Works, Erie, Pa.—A 16-page booklet covers the Erie City Three Drum Boiler and one of 12 pages describes and illustrates the Economic boiler. A feature of the latter booklet is a large phantom view with principal points of construction indicated with arrows.

Hendrick Manufacturing Co., Carbondale, Penna.—This company's complete line of perforated metals, elevator buckets, screens, steel grating, etc., is completely covered in a new catalogue which will be sent on request. Gauge and weight tables are given and the book is well illustrated.

Hooker Electrochemical Co., New York City—The latest publication of this company is a very handsome and complete catalogue of its products as well as a manual of valuable information which has been compiled for the benefit of those interested in its line of chemicals. As an introduction, there is a chapter giving the complete history of the company during its twenty-five years of existence with photographs of its executive personnel. There are a



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Bicarbonate of Soda
Calcium Chloride
Caustic Soda

WHEN Michigan Alkali was founded, friendly, personal service helped establish the merits of Wyandotte Products. Today, though the company has grown far beyond the dreams of its founders, and the merit of its product is unquestioned, Michigan service retains its friendly, personal touch. Only the scope of the service is changed; it is now measured by the customer's need alone.

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Careful, Intelligent, Quick Service

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STANDARD-FLANGED-WOOD PIPE

Patent Applied for

Special Collar Flange for Paper Mills.

A POWER SAVING PRODUCT (ask us about it)

Manufactured by
MICHIGAN PIPE COMPANY
Office and Factory: Bay City, Michigan

PRODUCTS:
Pipe for conveying—Pure Water, Acid Water, White Water, Sulphite Waste Water, Paper Stock, Ground Wood Pulp, Gases

SPECIAL FITTING FOR ACID WORK WRITE FOR CATALOG

Michigan Pipe for Paper Mills—Liquid Conveyed Touches No Metal

Showing the Special Flange Joint, Light in Weight, Specially Designed for Inside Installations. Easy to Take Apart.

ADVANTAGES:
Saves Power
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We maintain experts who will take entire charge of pipe installations if desired.

OVER 100 PAPER MILLS ARE NOW USING STANDARD FLANGED WOOD PIPE INSIDE THEIR MILLS

THE SIGN OF GOOD FELTS

FELTS For All Grades of Paper That Give Satisfaction

MADE BY **THE WATERBURY FELT CO**
AT **SKANEATELES FALLS, N.Y.**

PAPER MAKERS FELTS AND JACKETS

large number of fine half-tones illustrating the company's plants and equipment, and some valuable and unique conversion tables with charts and graphs. The book is bound with an embossed cover in colors.

Leeds & Northrup Co., Philadelphia, Pa.—The following publications have just been issued by this company: Catalogue No. 60, covering Photometers, has been entirely rewritten; No. 871-A is a new publication on the subject of Temperature Measurements in Generator Rotaring Fields; and Note Book No. 4, Notes on the Kelvin Bridge. These booklets have been carefully prepared and contain much valuable information. Copies upon request.

Reading Steel Casting Co., Bridgeport, Conn.—The new Reading-Pratt & Cady Catalogue covers Pratt & Cady Iron and Bronze Valves, and Asbestos Packed Cocks and Reading Cast Steel Valves and Fittings. There is valuable information on the care and use of valves, floor stand and chain wheel applications, motor operator applications, drilling tables for iron, bronze and steel flanges, and a general section of useful information for the engineer, steamfitter and plumber. Copies on request.

Poole Engineering & Machine Co., Baltimore, Md.—This company's new hand book, entitled "Flexible Advantages" has just been received and is available upon request. This book contains a description of the merits of the Poole Flexible Couplings. Diagrammatic figures of different types of couplings are given, also tables giving Specification data. The book is printed in two colors on India tint paper and is attractively bound.

Sullivan Machinery Co., Chicago, Ill.—Bulletin 87-A describes the "M-1", 1929 model Clay Spader which weighs 25½ pounds and may be equipped with several different types of handles and throttles, including single and double grip handles, and palm trigger, grip trigger and push throttle handles. Bulletin 87-B sets forth the adaptability of the "K-2" and "K-4" Buster. These tools are used for mill repairs, etc. where concrete walls must come out or trenches dug. Copies on request.

BOOKS

Chemical Bibliographies—The National Research Council announces the publication of its Bulletin No. 71 which is the First Supplement to the Bibliography of Bibliographies on Chemistry and Chemical Technology covering principally the period 1924-1928, Bulletin No. 50 having covered the period 1900-1924. This supplement contains approximately 4100 bibliographies classified under 1050 headings. The original Bulletin (No. 50) contained approximately 10,000 bibliographies classified under 2400 headings.

As the title indicates, the work (as in the case of Bulletin No. 50) is a compilation of bibliographies published as separates, or at the end of books or magazine articles, or as footnotes to the same, on the numerous aspects of pure and applied chemistry. Each entry gives name of author or compiler, title, and place of publication. The majority of the entries state the number of references, thus giving an indication of the completeness of the particular bibliography. The entries are classified under the proper subject-headings, alphabetically arranged. The duplication of individual entries has been largely avoided by the liberal use of cross references. There are 39 bibliographies on the subject of paper.

Copies of Bulletin No. 71 may be obtained from the publication office, National Research Council, B and 21st Streets, N. W., Washington, D. C., for $1.50 a copy. Also copies of the previous Bulletin (No. 50) may be obtained from the same source for $2.50 each.

D. L. Bellinger Joins Trimbey Machine Works

Mr. D. L. Bellinger has resigned his position as manager of the Glens Falls Machine Works to become associated with E. J. Trimbey and M. G. Tibbitts in the Trimbey Machine Works, of Glens Falls, N. Y.

Since his graduation from Cornell University in 1905, Mr. Bellinger has been connected with the paper industry in many capacities, having been for a number of years engineer for the Finch, Pruyn & Co., Glens Falls, N. Y., later manager of the Carthage Machine Co., Carthage, N. Y., D. J. Murray Mfg. Co., Wausau, Wis., and more recently the Glens Falls Machine Works.

In his new connection, Mr. Bellinger will assist in the development of further new paper mill equipment as well as aid in the design and installation of the present line manufactured by the Trimbey Machine Works.

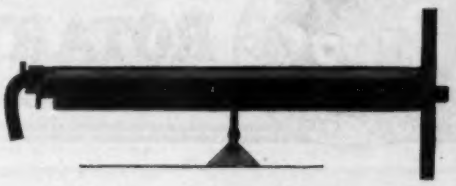
Safety Record Breakers

At midnight, August 8th, the East Works Plant of the Middletown Division of The American Rolling Mill Company had completed 1,158,000 man-hours without a lost time accident. This is 45 consecutive days for over 3700 men.

This is thought to be a world record for a steel mill and supplants the record ending June 29th made by Butler Works of the Columbia Division of ARMCO. The Pennsylvania plant completed 66 consecutive days, but only 1,006,135 man-hours.

SCOFIELD FELT CONDITIONER

The Scofield Felt Conditioner is a device designed to meet the needs of the paper industry. It is the result of years of concentrated study of the requirements. Its performance is guaranteed.



A dirty felt is a liability; a clean felt is an asset.

With the Scofield Conditioner you can keep your felts clean continuously. Dirty streaks and spots can be removed quickly and efficiently.

Many mills are using this method of felt conditioning. It is being used on machines making all grades of paper from tissues to boxboard.

Give us an opportunity to review your felt trouble.

We will gladly send you complete particulars upon request.

GILBERT J. SCOFIELD COMPANY, INC.

408 No. Pearl St.

ALBANY, N. Y.

Installation of nine 14'x 40' Sulphite Digesters built and erected by Biggs for the Consolidated Water Power & Paper Company, Appleton, Wis. Shell plates 1¼" thick, rivets 1⅜" diameter, test pressure 135 pounds. Digester heads one piece construction.

Biggs fabricates and erects stationary or tumbling digesters, rotaries, etc. for the Paper Industry in either Riveted or All Welded Construction.

Every piece of Biggs equipment is backed by our forty years experience.

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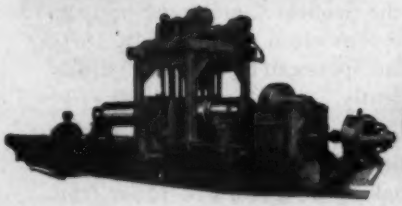
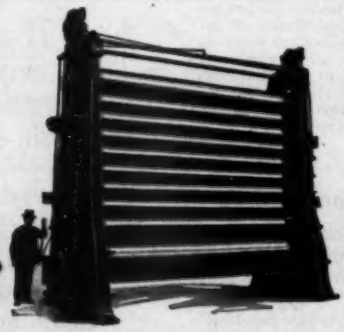
ROTARY BLEACHING BOILERS

"You Can Do It Better With a Biggs"

FARREL





FARREL

FARREL NEW TYPE ROLL GRINDER is electrically driven throughout, and is made in 24", 32", 36" and 42" sizes. All sizes are fitted with Geared Head, New Crowning Device and Automatic Lubrication.

FARREL CALENDERS are equipped with Electric, Hydraulic or Ratchet Lift, all operated from the floor.

FARREL ROLLS are made as large as 298" on the face. Known all over the world.

FARREL INDICATING ROLL CALIPER is extremely accurate. The majority of the parts are made of aluminum alloy, making a light weight instrument. Rolls may be calipered to the end of the face without reversing the caliper.

FARREL-BIRMINGHAM COMPANY INC.

ANSONIA, CONN.

Successor to: { Farrel Foundry & Machine Co., Ansonia, Conn., Est. 1848.
Birmingham Iron Foundry, Derby, Conn., Est. 1836.